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PREPARING SCHOOL ADMINISTRATORS TO LEAD TECHNOLOGY RICH PROFESSIONAL LEARNING COMMUNITIES IN THE DIGITAL AGE

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A DISSERTATION APPROVED FOR THE
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AND POLICY STUDIES

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DEDICATION

This dissertation is dedicated to my good friends Renee´ Specht and Dr. Robert Lee Kidd III, better known as Bob. They are no longer with us, but their spirit, strength, determination, and courage will live on in my heart forever.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

This study explores the coaching experiences of educational administrators in an attempt to gain greater understanding of how they develop the necessary skills to implement, lead, and support technology rich professional learning communities (PLCs). Participants came from a mix of urban, rural, and suburban school districts. Using semi-structured interviews and qualitative thematic analysis, the researcher examined what these administrators perceive as the most important factors in developing skills to lead technology rich PLCs from the perspectives of the participants and the cluster coaches who mentor them. Three primary themes emerged from the data; the strength of network learning, the utilization of technology as a form of communication in a professional learning community, and the constructivism of leadership.

CHAPTER ONE

Introduction to the Study

School administrators play a pivotal role in continuous school improvement through the utilization of professional learning communities; however, there is a limited knowledge base on the best way to prepare leaders for this daunting task. "The role of the principal has swelled in recent years to include a staggering array of responsibilities. Principals are expected to be educational visionaries, instructional leaders, assessment experts, disciplinarians, community builders, public relations experts, budget analysts, facility managers, special programs administrators, and guardians of various legal, contractual, and policy mandates and initiatives. Traditional methods of preparing administrators are no longer adequate to meet the leadership challenges posed by modern schools" (Davis, Darling-Hammond, LaPointe, & Meyerson, 2005, p. 3).

In an era characterized by globalization, it becomes critical for educational leaders to be able to effectively lead schools into the next century. In his book *The World is Flat*, Thomas Friedman (2005) suggests the world is "flat" in the sense that globalization levels the competitive playing fields between industrial and emerging market countries. The implication for educational leaders is the need to prepare students to compete in a global economy.

Principals build trust, focus the school, convene and sustain the conversation, and insist on the implementation of policy and practice (Marzano, 2003). The role of the principal is critical in school improvement efforts to implement and sustain change. Leadership embraces two primary functions: providing direction and exercising influence. School leaders occupy various roles in the school, provide direction and exert

influence in order to achieve the school's goals (Leithwood & Riehl, 2003). For quality teaching to occur in every classroom, all teachers must be supported by skillful principals who work in systems that support their sustained development as instructional leaders (Sparks, 2002). Leadership is the guidance and direction of instructional improvement while helping others to acquire new values and behaviors (Elmore, 2000).

In their daily practice, educational leaders manage resources, set direction, and exert appropriate pressure to achieve goals and mediate group dynamics (Roberts & Pruitt, 2003; Dufour, 2006). Principals develop the capacity of people and the organization by being clear on core values and confident in their capacity to work well with others by influencing, facilitating, guiding, and mentoring their staff. Principals who are instructional leaders keep schools centered on the core learning processes and organizational/structural changes required to generate high levels of learning and performance for all students and staff members (Sparks, 2002).

Three common elements define principals of productive schools: inclusive and facilitative leadership style, comprehensive and coherent leadership strategies, and the ability to focus on pertinent issues effecting the school (Sebring & Bryk, 2000). Principals also play an essential role in establishing a culture that promotes quality teaching; thus they are the primary culture carrier for the organization (Harris, 2000; Schweitzer, 2000). Effective principals nurture and sustain a culture of collaboration, trust, learning, and high expectations.

Given what is known about the influence of principal leadership in schools and the implications for life-long student learning, it is imperative to give principals the necessary skills to be able to create and sustain ongoing professional learning

communities. "Schools with strong professional learning communities were better able to offer authentic pedagogy and were more effective in promoting student achievement" (Newmann & Wehlage, 1995, p. 3). Characterized as one of the most powerful conceptual models for transforming schools, the professional learning community (PLC) differs from traditional schools in the following ways: (a) shared mission, vision, values, and goals (Bernhardt, 2002; Eaker, DuFour, & DuFour, 2002; Glickman, 1993; O'Hair, McLaughlin, & Reitzug, 2000); (b) collaborative teams (Newman, Smith, Allensworth, & Byrk, 2001); (c) collective inquiry (Cate, Vaughn, & O'Hair, 2006); (d) action orientation and experimentation; (e) continuous improvement (Putman & Borko, 2000); and (f) results orientation (Killion, 2002). Research has identified that PLCs provide teachers collaborative and supportive environments for on-going learning (Hord, 1997; Kruse, Louis, & Bryk, 1995). If school leaders want to enhance their organizational capacity to boost student learning, they should work on building a PLC that is characterized by shared purpose, collaborative activity, and collective responsibility among staff (Newmann & Wehlage, 1995).

As important as PLC development is to teachers, students, and learning, there is very little research that addresses how to give school leaders the necessary skills to lead and sustain professional learning communities. In addition, effective uses of available technologies can optimize time on task and maximize the success of professional learning communities (Carroll, 2000). This dissertation is a report of a qualitative study that explores from the participants' perspectives their coaching experiences as educational administrators who go through professional development training to lead technology rich professional learning communities and the perspectives of the administrators who have

served as coaches.

The first chapter of the dissertation presents the background of the study, specifies the problem of the study, describes its significance, and presents an overview of the methodology used for the study. The chapter concludes by noting the limitations of the study and providing definitions of special terms and a summary statement on the process of coaching in-service leaders.

Background of the Study

Moving school leadership from the Industrial Age into the present.

To innovate and succeed in a complex environment, mass collaboration must become a part of every leader's playbook and lexicon (Tapscott, 2006). So how does a school administrator lead in this complex environment (Sackney, 2006)? Industrial age assumptions about schooling are being challenged in this era of profound change (Hartle & Hobby, 2003). Changes in society require that we teach for a knowledge based economy. According to Hartle and Hobby (2003), "Schools remain hierarchical, vertically organized institutions, which operate for about one-third of a day on five days each week. The ability of this kind of organization to sustain motivation and engagement for each individual learner and employee – fundamental demands for the acquisition of the complex skills demanded by the knowledge economy – is increasingly doubtful" (p.383).

Research suggests that leadership is second only to classroom instruction among school-related factors that influence student outcomes (Leithwood, Louis, Anderson, & Wahlstrom, 2004). Powerful educational leaders also attract, retain, and get the most out of talented teachers by providing targeted support that enhances teachers' performance,

modeling best practice, and offering intellectual stimulation (Leithwood, et al. 2004). Exemplary pre-and in-service development programs for principals possess many common components, including an alignment that is comprehensive and coherent with state and professional standards in particular the NCATE/Interstate School Leaders Licensure Consortium standards, which accentuate instructional leadership (Darling-Hammond, LaPointe, Meyerson, & Orr, 2007).

Although there are always constant challenges in school leadership, the extent and intensity of the job is at a critical turning point, one based on a new global age, new principles, worldviews, and business models where the nature of the game seems to constantly be changing (Evans, 1996; Tapscott, 2006). Just as the new art and science of collaboration called "wikinomics" is emerging so are the initiatives focusing on collaboration in the schools – professional learning communities. By combining the utilization of technology with the dynamics of a professional learning community, school administrators can lead their schools into the digital age.

Leading in a Professional Learning Community.

Leading in a professional learning community is a complex role for any principal which involves creating a culture of trust, collaborative frameworks, risk taking, innovation, reflective practice, and shared leadership (Sackney, 2006). A focus on student learning is a fundamental component of the vision in a PLC (Morrissey, 2000). This emphasis on learning leads those within the school to concentrate their efforts on the following three critical questions: "Exactly what is it we want all students to learn? How will we know when each student has acquired the essential knowledge? What happens when a student does not learn?" (DuFour, DuFour, Eaker, & Karhanek, 2004, p. 21). By

addressing these three fundamental questions, schools transcend from a culture with a primary emphasis on teaching to a culture that emphasizes student learning (Eaker, Dufour et al. 2002). Furthermore, Huffman and Hipp (2003) state: "…the creation of a professional learning community is not an end in itself. It is, rather, an infrastructure for supporting school improvement so that, ultimately, the level and quality of student learning increases" (p. 81).

Recent research and knowledge of successful schools identifies common features in PLCs. In these cultures, the stakeholders (a) share a high value for learning, (b) work to enhance curriculum and instruction, and (c) focus on students. In schools with PLCs, the culture possesses:

- A widely shared sense of purpose, values, and goals;
- Norms of continuous learning and improvement;
- A commitment to and sense of responsibility for the learning of all students;
- Collaborative, collegial relationships;
- Opportunities for staff reflection, collective inquiry, and sharing personal practice; and
- School leadership (Dufour & Eaker, 1998; Hord, 1998; Stein, 1998; Fullan, 2001; Lambert, 2003).

In addition, PLCs share a common professional language, communal stories of success, extensive opportunities for quality professional development, and ceremonies that celebrate the improvement, the collaboration, and the learning (Peterson & Deal, 2002). Furthermore, a PLC exists when a strong school culture is in place at a school that

grows out of day-to-day interactions among students, teachers, and administrators underlying the norms, values, beliefs, traditions, and rituals that build up over time as people work together to solve problems and confront challenges (Deal & Peterson, 2002).

Saphier and King (1985) identified additional norms associated with strong school cultures: collegiality; experimentation; high expectations; trust and confidence; tangible support; reaching out to the knowledge base; appreciation and recognition; caring, celebration, and humor; involvement in decision-making; protection of what's important; traditions; and honest, open communication. If these norms are strong, then improvements in instruction are significant, continuous, and widespread. Of the twelve norms, collegiality, experimentation, and reaching out to a knowledge base have the strongest correlation between changing the school environment and improving student achievement (Saphier & King, 1985).

In a professional learning community, administrators promote and sustain teacher leadership by establishing and maintaining structures for learning. These structures are composed of roles and responsibilities, inquiry, reflection, and a focus on student learning (Lambert, 2003). The staff views the school improvement plan as the primary vehicle for sustained, continuous school improvement.

Building capacity for a learning community is a complex process requiring principals to possess skills in communication, group process facilitation, collective inquiry, conflict mediation and data management (Sackney, 2006). Research supports the pivotal role of the building level principal in facilitating quality learning, continuous school improvement, and systemic change (Speck, 1999; Mitchell & Sackney, 2000; Fullan, 2001; Harris, 2002; Lambert, 2003). Leadership is a critical element in building a

school-wide collective focus on student learning (Newmann & Wehlage, 1995).

Past research indicates that beginning principals struggle at delegating authentic leadership responsibilities, utilizing collaborative decision-making, developing systems and systemic thinking (Leithwood & Steinbach, 1999; Fullan, 2005). However, shared leadership permeates every aspect of a professional learning community. For this framework to be successful in schools, principals must possess the skills to engage teachers in collaboration and the courage to nurture their leadership capabilities.

Context for the Study

The K20 Center is a university-wide research center located at The University of Oklahoma. The Center "is a consortium of school-university-community partnerships committed to improving student learning from Kindergarten through graduate education (K20) through the development of professional learning communities" (O'Hair, Reitzug, Cate, Averso, Atkinson, Gentry, Garn, & Jean-Marie, 2005, p. 72). Research is an integral part of the work undertaken at the K20 Center as is providing professional development to administrators and teachers in the IDEALS framework, "Ten Practices of High Achieving Schools" (O'Hair, 2000).

As a K-12 initiative, Oklahoma-Achievement through Collaboration and Technology Support (OK-ACTS) trains, creates, and sustains networks of superintendents, head principals, and other educators through ongoing professional development designed to help them lead reform efforts in their communities (O'Hair et al., 2005). OK-ACTS is a partnership for leadership and technology development to improve student achievement by connecting, supporting and educating 1,500 Oklahoma principals and superintendents in the process of developing technology skills for school

administrators, facilitating systemic change, including authentic student learning through technology integration, and engaging in collaborative networking.

Accomplishing the ongoing professional development is carried out in three phases of operations.

1. Phase I is the leadership phase through which *superintendents* and *head principals* participate in seminars dedicated to leading professional learning communities that integrate technology to enhance learning. Originally funded through the Bill and Melinda Gates Foundation Leadership Development grant, Phase I is currently funded through the Oklahoma Educational Technology Trust (O.E.T.T.), Oklahoma legislature, and USDE GEAR UP.
2. Phase II of OK-ACTS works in partnership with the Oklahoma Educational Technology Trust grant to schools and builds on Phase I learning to plan and deliver professional development for *teachers*. OETT provides three-year grants to schools for integrating technology with curriculum and instruction.
3. Phase III continues the work begun in the other two phases, but learning is focused on *students* in specific content areas—currently science, technology, and mathematics.
4. Phase IV focuses on student engagement in order to develop, implement, and test innovative learning strategies for today's 'digital native' students, strategies designed to produce substantial achievement benefits for all students.

In addition to these networks of practicing administrators and teachers, the K20 Center in collaboration with the EACS department of the Jeannine Rainbolt College of Education delivers focused graduate degree programs to train potential and current school

leaders in professional learning communities, collaborative leadership, and technology integration.

OK-ACTS Phase I leadership training consists of a total of 75 hours beginning with the two-day leadership seminar. This initial training is followed by two cluster meetings connected with partner meetings, videoconferences, the OU Winter Institute, technology integration assessments/surveys, and an ACTION Plan submitted by each participant based on the Rubric for High Achieving Schools. Participants develop one of the "10 practices of High Achieving Schools" incorporating technology in a concerted effort to improve student achievement. The ultimate purpose of the Phase I leadership training is to support schools and districts in their efforts to become professional learning communities (PLCs) that utilize technology to increase student academic performance.

Problem

How are educational administrators being prepared to lead our schools into the 21st Century? Research confirms that the growth of a vital professional learning community among educators is a key factor in improving schools (Fullan, 1999; Langer, 2000, Little & McLaughlin, 1993; Louis, Kruse, & Marks, 1996; Newman & Associates, 1996). Research also supports the pivotal role of leadership in determining the success of a professional learning community. A school leader sets the tone for school improvement by being an active learner, investing time in the process, respecting the ideas of others, and empowering teachers as leaders (Zepeda, 1999; Lambert, 2003).

The K20 Center for Educational and Community Renewal – Achievement through Collaboration and Technology Support (K20-ACTS) at the University of Oklahoma proposes a model for professional development for school leaders for

successfully implementing technology while developing a professional learning community. The model is based on the centers work with over 950 leaders across the state and the analysis of the school leaders' perceptions of their learning about school renewal, leadership and technology (Cate & O'Hair, 2007). Their model is supported through a National Staff Development Council (2004) evaluation of the Gates grants and a proxy design quantitative study which includes complimentary qualitative data sources, i.e., program documents and seminar surveys (Cate & O'Hair, 2007). The National Staff Development Council (2004) ranked the K20-ACTS Leaders program 3rd nationally out of 50 state programs in developing educational leaders for systemic, substantive changes impacting student learning (Cate & O'Hair, 2007).

Although further research is called for, results of this preliminary study indicated that the integration of the democratic IDEALS that supports and enhances increased student achievement with technology integration shows significant self-reported change in leadership practices (Cate & O'Hair, 2007). As school leaders learn in a supportive network, they adjust their practices and begin to provide new focus and coherence to the implementation of school renewal and leadership for technology (Cate & O'Hair, 2007). Participants recognize technology as a catalyst that joins many initiatives together and allows new learning to flourish (Cate & O'Hair, 2007). Through the K20-ACTS professional development, school leaders learn and adapt strategies for school renewal and leadership for technology (Cate & O'Hair, 2007).

The school principal is the keeper of the vision who invites shared decision-making while maintaining the focus of lasting school improvement. Past research indicates, however, that beginning principals feel ill equipped to handle the multitude of

situations which they face due to lack of experience and knowledge. Beginning principals are not good at delegating authentic leadership responsibilities or initiating collaborative decision-making processes for their staffs (Leithwood & Steinbach, 1999). Research by Fullan (2005) found that beginning principals are also not good at developing systems and systemic thinking which is paramount in developing and sustaining a professional learning community.

Adding to this dilemma is the sliding of 21st century education into the digital age. An age characterized by young people harnessing technology and fearlessly adopting new systems for communicating (instant messaging), sharing (blogs), buying and selling (ebay), exchanging (peer-to-peer technology), creating (Flash), meeting (3D worlds), collecting (downloads), coordinating (wikis), evaluating (reputation systems), searching (Google), analyzing (SETI), reporting (camera phones), programming (modding), socializing (chat rooms), and even learning (Web surfing) (Prensky, 2006). School leaders must pave the way for engaging students the 21st century way by providing technology rich environments, networked professional learning communities, and trained teachers to help facilitate the process.

Many educators write about the effectiveness of face-to-face coaching experiences as an instructional tool, but minimal research attention is directed toward coaching from a distance and the impact of administrative coaching in the development of a professional learning community. With this understanding, educators can provide effective research based coaching strategies to support administrators near or far who are interested in leading professional learning communities valuing technology.

Purpose

Given that principals are expected to build, lead, and sustain professional learning communities in the 21st century digital age, very few programs seem to focus on how to give principals the essential skills to undertake such a tremendous task. Although much research focuses on the leadership implementations required to form a professional learning community, very little research focuses on the professional development necessary to give school leaders these vital skills. The purpose of this qualitative interpretive study is to describe the coaching experiences of educational administrators to gain greater understanding of how they develop the necessary skills to implement, lead, and support technology rich professional learning communities. The qualitative data will be collected through semi-structured interviews with open ended questions and analyzed to determine the effectiveness of professional development that substantially influences their growth as technology leaders from the perspectives of the participants as well as the coaches.

Research Questions

To achieve this purpose, the study investigated the following qualitative research questions:

1. What are the perceptions of educational administrators who are being trained to lead technology rich professional learning communities about their professional development experiences?
2. What are the perceptions of peer coaches as they assist administrators in establishing a professional learning community with an emphasis on technology in their schools?

Significance of the Study

This study was intended to clarify the professional development that is essential for school administrators in their quest to build professional learning communities with an emphasis on technology. The study focused on the preparation of leaders through peer coaching and the necessary skills that they must gain in order to implement and sustain a collaborative learning community, one that embraces shared decision-making where the goal is increased student achievement through the use of technology.

The implication for our educational leadership preparation is that professional learning communities as well as effective technology leaders do not just happen. Many principals appear ill prepared and come lacking the necessary skills to begin the process of forging a professional learning community at their school site. Research supports the model of a PLC, coaching, and the importance of technology in our digital age, yet there is little information on how to join these entities placing into the hands of administrators the skills that they need to lead technology rich professional learning communities. This study will add to the existing literature on PLCs that informs leaders about best practice.

Overview of the Method

The cqualitative interpretive design supported by the thematic analysis process deepens the understanding of what educational leaders feel are essential professional development experiences that are necessary for them in their roles as implementers and sustainers of professional learning communities. The design also highlights the importance of technology skills for administrators as PLCs examine student achievement in a digital age. The study possesses essential characteristics of qualitative research (goal

of eliciting understanding and meaning, researcher as primary data collection and analysis instrument, use of fieldwork, inductive orientation to analysis, richly descriptive findings) but does not focus on culture, build grounded theory, or intensely study a single unit or bounded system. Utilizing interpretivism as a theoretical lens, this method will provide a local rather than a global orientation and describe from the perceptions of the participants and coaches their experiences in this social context. This method "simply seeks to discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved" (Merriam 1998, p. 11). Methodologically, this study will add to the knowledge base of qualitative research, thematic analysis, and interpretivism.

Limitations of the Study

The limitations of the study are those characteristics of design or methodology that set parameters on the application or interpretation of the results of the study. The following limitations exist for this research study:

- By design this qualitative study focuses only on educational administrators who participated in the 75-hour professional development training that incorporates democratic leadership and school change based on the IDEALS and Ten Practices framework utilizing technology integration strategies (Williams, Atkinson, Cate, & O'Hair, 2008).
- The study was conducted by a single researcher with inborn opinions, biases, and perceptions. Also, the researcher's role as a cluster coach allowed greater accessibility to participants and other coaches, but may have influenced the interpretation of the study.

- The researcher is also a lifelong educator with the last eight years being spent as a school administrator. The researcher holds strong beliefs about the necessity of establishing a school as a professional learning community and the role of leadership, professional development, and technology integration in this process.

Definitions of Key Terms

1. Professional learning community- a term used to describe a collegial group of administrators and school staff who are united in their commitment to student learning, share a vision, work and learn collaboratively, visit and review other classrooms, and participate in decision making (Hord, 1997).
2. Coaching –a process in which two or more colleagues work together to reflect on current practices, expand, refine, and build new skills, share ideas, teach one another, conduct collegial conversations, and solve problems while enabling teachers to transfer training to classroom practice, while deepening collegiality, increasing professional dialogue, and giving teachers a shared vocabulary to talk about their craft (Garmston, 1987; Joyce & Showers, 1996).
3. Instructional Leaders – educators who in their daily practice manage resources, set direction, and exert appropriate pressure to achieve goals and mediate group dynamics (Dufour, 2006; Roberts & Pruitt, 2003).
4. Shared Vision – a set of core beliefs that holds its individual members together and helps the group accomplish its mission and fulfill the needs and aspirations of individuals (Glickman, 1998).

5. Instructional Program Coherence – implies a unity of purpose, a clear focus, and shared values for student learning where a common instructional framework exists, a staff that implements the framework, and a school that allocates its resources to advance the school's common instructional framework (Newmann et al., 2001).
6. Leadership Capacity – exists when a staff feels a sustained sense of purpose with broad involvement and collective responsibility for student learning where leadership is distributed among teachers who then perform key roles in the school improvement process (Lambert, 2003; Sparks 2002).
7. Distributed Leadership – where all members of the education community (teachers, staff members, parents) are responsible and possess the authority to take on appropriate leadership roles (Neuman & Simmons, 2000).

Conclusion

Due to a lack of preparation, educational leaders do not have the skills necessary to implement and sustain professional learning communities that emphasize technology in relation to student achievement. Research findings repeatedly confirm that a significant factor in raising academic achievement is building capacity in schools for lasting school improvement (Lambert, 2003). Recent research also shows that the kinds of professional development that improve instructional capacity are ongoing, embedded within context specific needs, aligned with reform initiatives, and grounded in collaborative, inquiry-based approaches to learning (Senge, 1990; Knapp, McCaffrey, & Swanson, 2003).

Professional learning communities demonstrate all of the criteria to be an effective means for lasting school improvement and significant research studies have been published on the subject of professional development through learning communities. Yet, there continues to be a lack of concrete data on coaching educational administrators in leading and implementing technology rich professional learning communities. Knowing that it is imperative that we give educational leaders the necessary skills to be successful in their jobs, this study attempts to unravel the experiences of educational leaders and the utilization of technology in the implementation of professional learning communities that sustain student achievement.

CHAPTER TWO

Theoretical Perspective

Three great reform movements define the history of education in the United States during the last 100 years: The Progressive Movement, the Civil Rights Movement of the 1960's, and the Excellence Reform Movement of the last decade (Berube, 1994). Of all the reform movements, "perhaps no educational philosophy so influenced and characterized American education as progressive education" (Berube, 1994). Progressive education shaped American education and society throughout the remainder of the twentieth century with its chief philosopher, pragmatist John Dewey. His ideas gave American education its identity and his influence lasted nearly a century. At the heart of progressive education is a child centered philosophy where creativity, self-expression, critical thinking, and individualism are valued and nurtured. These constructivist values identify with American education and describe the American character.

The emergence of a massive Civil Rights Movement between 1954 and 1968, in conjunction with the Soviet Union's launch of Sputnik I prompting a greater emphasis on math and science, placed education in the forefront of controversy. This era began to influence a national educational agenda for nearly a generation known as Equity Reform. Twenty five years later another reform movement similar in spirit and instigated by the report *A Nation at Risk* emerged. Known as the Excellence Movement and spurred by a response to foreign economic competition, this reform urged a consistent direction based on the premise that schools need to do more. However, no new ideas emerged from this movement only a strengthening of existing practices and disappointing results for schools. The lack of research on how people learn teaching strategies and how schools

successfully implement innovations were key reasons for the failure (Showers & Joyce, 1996). These unfulfilled promises led to strategies calling for national educational goals, standards, and site-based reform culminating in the school improvement initiative, the No Child Left Behind Act (NCLB) of 2001.

NCLB is the latest federal legislation (another was Goals 2000) which enacts the theories of standards-based education reform, formerly known as outcome-based education, which is based on the belief that high expectations and setting of goals will result in success for all students. The Act requires states to develop assessments in basic skills to be given to all students in certain grades, if those states are to receive federal funding for schools. NCLB does not assert a national achievement standard; standards are set by each individual state. This increased level of accountability places immense pressure on schools and forces them to constantly examine their school improvement efforts. As researchers, we study ways to help educators inform their practice and within the last ten years there is growing evidence that the best hope for significant school improvement is transforming schools into professional learning communities (Dufour, 1998).

The purpose of the study is to describe the professional development experiences of educational administrators who go through training to lead professional learning communities that utilize technology to increase student achievement. Beginning with a framework drawn from the theoretical perspectives of learning organization theories, this literature review will address the professional literature regarding leadership development and school change for the digital age with a specific focus on professional learning communities (PLCs) for the 21st century, coaching and technology leadership.

Learning Organizations

The emergence of the concept of the 'learning organization' is based on the contributions of Schon's idea of 'the learning society.' Schon provides a theoretical framework linking the experience of living in a situation of an increasing change with the need for learning. "We must, in other words, become adept at learning. We must become able not only to transform our institutions, in response to changing situations and requirements; we must invent and develop institutions which are 'learning systems,' that is to say, systems capable of bringing about their own continuing transformation (Schon 1973, para. 17; Smith 2001, para. 17). Subsequently, significant changes in the nature and organization of production and services instigate companies, organizations, and governments to operate in a global environment that has altered its character in significant ways

It was in this context that Senge (1990) began to explore 'The art and practice of the learning organization.' However, even with Senge's contributions the clear definition of a learning organization continues to be elusive, but revolve around the following three explanations:

- Learning organizations [are] organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together. (Senge, 1990, pg. 3)
- The Learning Company is a vision of what might be possible. It is not brought about simply by training individuals; it can only happen as a result of learning at the whole organization level. A Learning Company is an organization that

facilitates the learning of all its members and continuously transforms itself. (Pedler. 1991, 1996).

- Learning organizations are characterized by total employee involvement in a process of collaboratively conducted, collectively accountable change directed towards shared values or principles. (Watkins & Marsick, 1992).

Most conceptualizations of a learning organization work on similar assumptions that characterize learning as valuable, continuous, and most effective when shared and that every experience is an opportunity to learn (Kerka, 1995). The following characteristics typically define a learning organization:

- Provide continuous learning opportunities.
- Use learning to reach their goals.
- Link individual performance with organizational performance.
- Foster inquiry and dialogue, making it safe for people to share openly and take risks.
- Embrace creative tension as a source of energy and renewal.
- Are continuously aware of and interact with their environment. (Kerka, 1995)

Peter Senge's five disciplines provide the keys to mastering this sort of organization. His vision of a learning organization as a group of people who are continually enhancing their capabilities to create what they want to create continues to influence organizations nationwide. Senge defines learning organizations as "…organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole

together" (Senge, 1990, p.3). In other words, Senge believes that real learning gets at the heart of what it means to be human. The five learning disciplines of personal mastery, shared vision, mental models, team learning and systems thinking constitute the framework of Senge's learning organization.

Personal mastery is about creating what one wants in life and in work. Continually expanding personal mastery is a discipline based on a number of key principles and practices: personal vision, personal purpose, holding creative tension between vision and current reality, mitigating the impact of deeply rooted beliefs that are contrary to personal mastery, commitment to truth, and understanding the subconscious (Senge, 1990). Senge equates personal mastery with effective leadership and states that "organizations learn only through individuals who learn. Individual learning does not guarantee organizational learning. But without it no organizational learning occurs" (Senge, 1990, pg. 139).

Shared vision establishes a focus on mutual purpose and commitment encompassing all of the people within a school –administrators, teachers, and other staff members. People with a common purpose begin to work together to nourish a sense of commitment and guided practice. A school community with an emphasis on learning necessitates a common shared vision process where increased clarity, enthusiasm, and commitment continue to grow.

Defined as deeply ingrained assumptions, generalizations, or even pictures and images, mental models influence how we view the world and the resulting actions (Senge, 1990). For a school, working with mental models means honestly defining the current reality through reflection and inquiry even if this means discussing uncomfortable

subjects. If organizations are to develop a capacity to work with mental models, then it will be necessary for people to learn new skills, develop new orientations, and for there to be institutional modifications that foster such change.

Team learning involves transformational thinking through group interaction. School personnel utilize dialogue and skillful discussion techniques to facilitate creative thinking and to achieve common goals emphasizing that the sum of the whole is greater than any one individual's talents. When teams learn together, not only can there be good results for the school, but members will grow more rapidly than could have occurred otherwise (Senge, 1990). A key component of team learning is ongoing dialogue which is a necessity in successful school change.

Systems thinking, often called the cornerstone of the organization, is about change and giving individuals the skills that they need to be able to deal more effectively with the forces that shape the consequences of their actions. Systems theory's ability to comprehend and address the whole, and to examine the interrelationship between the parts provides, both the incentive and the means to integrate the disciplines (Senge, 1990). With regards to organizations Senge emphasizes the importance of learning from our own experiences, but states that we may never directly experience consequences of many of our most significant decisions (Senge, 1990). A key aspect of systems is the extent to which they may involve delays – causing actions to occur gradually over time. The systems viewpoint is generally considered an analysis of an organization over the long term. In relation to schools, tools and techniques such as graphic organizers, stock-and-flow diagrams, system archetypes, and various types of learning lab simulations help students gain a broader perspective deepening their understanding of the subjects that

they study (Senge, 2000).

Professional Learning Communities

Even before Peter Senge publishes *The Fifth Discipline* in 1990, business leaders and educators continually look for ways to build, implement, and sustain learning organizations. During the 1980's, a focus on teacher quality in relation to the workplace maintains that teachers who feel support in learning and classroom practice feel not only effective, but committed to their school (Rosenholtz, 1989). A heightened sense of self efficacy on the part of teachers promotes adoption of new teacher behaviors and adds longevity to their stay in the profession (Rosenholtz, 1989). Research from the 1990s suggests that teachers who have the opportunity for collaborative inquiry and learning develop knowledge garnered from their experiences and that teachers need an environment that supports hard work, challenges, risk taking, and personal growth (McLaughlin & Talbert, 1993; Midgley, 1993). Schools who work on enhancing their organizational capacity are urged to build a professional community characterized by shared purpose, collective activity, and collective responsibility among staff (Newmann & Wehlage, 1995). While in 1996, Linda Darling Hammond discusses curriculum reform and the transformation of teacher roles in relation to shared decision-making and organizations that respect learning, honor teaching, and teach for understanding.

In recent years a new focus, the professional learning community (PLC), emerges as one of the most promising infrastructures for transforming schools. Although there is not one universal definition for a professional learning community, Dr. Shirley Hord defines it simply as the professional staff learning and working together to improve student achievement (Hord, 1997). Others acknowledging the importance of learning

communities in schools describe a meeting ground for learning where all involved enhance their capabilities forming real communities of shared purpose, mutual regard, caring, truthfulness, and integrity giving schools a consistent message with a clear sense of direction (Dufour, 1998; Senge, 2000; Lambert, 2003).

For this transformation to occur, a cultural shift must take place in the school community where a primary focus on teaching becomes a primary focus on learning (Eaker, Dufour et al. 2002). Developing at its own pace, over time, through intense administrative and staff efforts, the professional learning community structure supports teachers and administrators in improving their practice through learning new curriculum, instructional strategies, and methods for interacting meaningfully with each child all falling under the umbrella of collegiality (Morrissey, 2000).

Although a focus on student learning is a fundamental component of a PLC, teacher learning is also a predominate focus sustained in the belief that student learning will not occur unless teachers are effective in their own practice (Carmichael, 1982). This emphasis on teacher learning occurs through purposeful, collaborative, reflective practices embedded in the school community where "learning is by doing, reflecting on the experience, and then generating and sharing new insights and learning with oneself and others" (Wood & McQuarrie, 1999). Job embedded professional development plays an integral role in a professional learning community helping to sustain a culture of learners and becoming indispensable in all forms of leadership and collegial sharing (Guskey, 2000). Professional development efforts also center on the following three critical questions: "Exactly what is it we want all students to learn? How will we know

when each student has acquired the essential knowledge? What happens when a student does not learn?" (DuFour, DuFour, Eaker, & Karhanek, 2004, p. 21).

Hord conceptualizes five dimensions of professional learning communities which help define and shape their development. Ongoing and consistent, the following five dimensions sustain a PLC in its school improvement efforts (Dufour, 1998; Hord, 1998; Stein, 1998; Fullan, 2001; Lambert, 2003):

1. A widely shared sense of purpose and values;
2. Norms of continuous learning and improvement;
3. A commitment to and sense of responsibility for the learning of all students;
4. Collaborative, collegial relationships; and
5. Opportunities for staff reflection, collective inquiry, and sharing personal practice.

In addition, these schools share a strong culture of teacher leadership an outcome of collective learning within the professional learning community (Huffman, 2003).

Re-culturing of a school into a professional learning community involves a transformation where collaboration plays a vital role. Schools must shift from a culture of teacher isolation to a culture of deep and meaningful collaboration where teachers take on the responsibility of assessing and documenting their students' learning (Huffman, 2003). Professional learning networks for teachers emphasize the belief that "teachers learn best by sharing ideas, planning collaboratively, critiquing each other's idea and experiences and reducing the isolation encountered in most schools" (Veuglers & O'Hair, 2005, p. 2). Collaborative teams whose members work interdependently to achieve common goals characterize the culture of a professional learning community. Time for collaboration is built into the school day with team norms guiding collaborative practices.

Teams pursue specific and measurable performance goals focusing on key questions associated with learning. All team members are provided access to relevant information (Eaker, Dufour et al. 2002).

In a professional learning community there is a delicate balance between learning and leading with teacher leaders playing a predominant role in the school improvement process, influencing others toward enhanced educational practice (Katzenmeyer & Moller, 1996). Peer study teams, mentoring, coaching, and showing interest in others successes are ways in which teachers can share the responsibility of improving student learning at their school (Conzemius & O'Neill, 2001). This skillful involvement of teacher leaders, combined with broad-based participation from stakeholders, builds leadership capacity in a school (Lambert, 2003). High leadership capacity schools provide teachers with multiple opportunities for skillful participation and see the benefits of improved teaching and learning; teacher efficacy; teacher retention; commitment to change efforts; enhanced teacher careers; and increased teacher accountability for results (Rosenholtz, 1989; Darling-Hammond, 1990; Hart, 1990; Gordon, 1991; Ovando, 1994; Short, 1994; Firestone, 1996; Hipp, 1997; Fullan, 2001).

Professional learning communities share the following six characteristics:

- Shared mission, vision, and values
- Collective inquiry
- Collaborative Teams
- Action orientation and experimentation
- Continuous improvement
- Results orientation

Schools begin with a mission statement then develop a school vision that is based on collective inquiry and guiding principles. A vision statement forms the basis for school improvement planning, budgeting, and staff development. The goal of the vision statement is to continue to move the school forward in the direction that supports the beliefs held by the stakeholders of the school.

As schools make the cultural shift toward becoming a professional learning community, there is an emphasis on shared values and commitments. A PLC recognizes that beliefs are important, but makes a concentrated effort to go beyond beliefs and focus on specific behaviors that will make a difference for the school. Also, in this community of learners, goals are tied directly back to the vision that stakeholders have for the school. Goals for a professional learning community may be few in number, but focus on the desired outcomes and are translated into measurable performance standards that are continuously monitored. An important part of the goal development process is to ensure that some goals will produce short-term results so that successes can be celebrated along the way.

Collective inquiry fuels the school improvement engine in a professional learning community. Questioning is the norm as stakeholders test the status quo and creatively labor together to pioneer new methods and reflect on results. This process enables team members to benefit from the deep learning cycle which Senge characterizes as the essence of the organization (Senge, 1994). A PLC is defined by the ability of the team members to examine and modify beliefs that will enable them to view the world differently and make significant changes in the culture of the organization (Dufour, 1998).

One of the most important cultural shifts that must occur if schools are to function as a professional learning community involves a change from a primary focus on teaching to placing a primary focus on student learning. Concentrating on student learning involves extensive study and discussions about best practices as well as the curriculum where content is reduced, allowing more meaningful, focused instruction in the classroom. The essence of this cultural shift illustrates that collaborative teams of teachers are building a culture of experimentation by engaging in active research. They want practice to be "internally" validated in their school, in their classrooms, with their students (Eaker, Dufour et al. 2002).

Professional learning communities are also action oriented. Experimentation is the norm reflecting the development and testing of new hypotheses where mistakes are viewed as new learning experiences rather than mistakes. This quest for knowledge translates into another characteristic of the learning community continuous improvement. This comes with the realization that great schools are never there, a school's mission and vision may never come to fruition, but the challenge is in the quest. Also defining a professional learning community is results orientation – the realization that everything that transpires there must be assessed on the basis of results rather than intentions (Dufour, 1998).

Leadership, focused school improvement plans, and **c**elebrations also play an integral role in any professional learning community. In a PLC, administrators are viewed as a leader of leaders. They sustain teacher leadership by establishing and maintaining high leadership capacity and by supporting and developing leadership among new teachers. Leadership capacity involves an infrastructure for learning composed of

roles and responsibilities, inquiry, reflection, and a focus on student learning (Lambert, 2003). The staff views the school improvement plan as the primary vehicle for sustained, continuous school improvement. This plan focuses on a few key goals that will produce a significant impact on student learning and again reflects on the question if all of the goals in the plan are accomplished, how will this impact student achievement (Eaker, Dufour et al. 2002)? The school staff expands plans to recognize and celebrate the achievements that all students are making in school. Ceremonies develop that recognize and celebrate school improvement on a regular basis

PLCs do not just happen. Time, support, and persistence are just a few of the factors necessary in developing a PLC. The rationale for any strategy in regards to building a learning organization revolves around the premise that such organizations will produce dramatically improved results (Senge, 1996). The PLC conceptual framework provides a paradigm shift in the traditional way that schools do business by re-culturing the school within and accentuating continuous school improvement efforts.

Leadership Development

Moving School Leadership from the Industrial Age into the Present

The United States is falling behind other nations in international comparisons of academic achievement due to a school structure that is fundamentally based on an antiquated system established in the late 1800s (Jacobs, 2010). "Sustained improvements in schools will not occur without changes in the quality of learning experiences on the part of those who run the schools" (Fullan, 1991, p.344). Although there are always constant challenges in school leadership, the extent and intensity of the job is at a critical turning point, one based on a new global age, new principles, worldviews, and business

models where the nature of the game seems to constantly be changing (Evans, 1996; Tapscott & Williams, 2006). Just as the new art and science of collaboration called "wikinomics" is emerging so are the initiatives focusing on collaboration in the schools – professional learning communities. If we are to create schools and districts as communities, we must restructure interaction patterns so that communal relationships can be built and conversations held. We need educational leaders who are prepared differently than those that now inhabit the schools (Lambert, 1995). By combining the utilization of technology with the dynamics of a professional learning community, school administrators can lead their schools into the digital age.

Three common elements define principals of productive schools: inclusive and facilitative leadership style, comprehensive and coherent leadership strategies, and the ability to focus on pertinent issues affecting the school (Sebring & Bryk, 2000). Principals also play an essential role in establishing a culture that promotes quality teaching and they are the primary culture carrier for the organization (Harris, 2000; Schweitzer, 2000). Principals nurture and sustain a culture of collaboration, trust, learning, and high expectations.

Shared Vision

Effective leadership means more than simply knowing what to do – it's knowing when, how, and why to do it (Waters, 2003). Research continues to emphasize that a shared vision grounded in core beliefs is a critical, essential component to the success of organizations, including schools (Averso, 2004). Any successful organization, whether it is a community or a religious, social, business, or educational group, has a set of core beliefs that holds its individual members together and the core beliefs help the group

accomplish its mission and fulfill the needs and aspirations of individuals (Glickman, 1998).

At the heart of a shared vision is the school principal whose role is to clarify his/her own values engaging others in collaboratively forming and adhering to a shared vision of schooling. Visions cannot be produced in reaction to what is not wanted, but must instead be a product of what is wanted (Fritz, 1996). In fact, Glickman moves beyond the notion of a shared vision and uses the word "covenant" to describe learning principles that are derived from a definition of education and democracy and that are more than a vision of teaching and learning. A vision is what we would like to imagine; a covenant is a sacred obligation to spend a life in accordance with it (Glickman, 1998). Teachers as moral change agents should make a difference in the lives of students in ways that matter (Fullan, 2001). The vision is the touchstone for all other actions—the yardstick for questions and the reference point for conversations (Lambert, 2003).

A shared vision is a result of leadership and how we define leadership frames how people will participate in it. Leadership capacity means broad-based skillful participation in the work of leadership. Broad-based means that if the principal, a vast majority of the teachers, and a large number of parents and students are all involved in the work of leadership, then the school will most likely have a high leadership capacity that achieves high student performance (Lambert, 2003).

A principal's role is to empower the vision. There is a critical need for leaders to provide opportunities for the development of an informed knowledge base by those stakeholders involved in the development of the shared vision before the beliefs and vision are crafted (Averso, 2004). Leaders must also support the vision by achieving

consensus of commitment to the vision and by continually building the confidence among their staff to embrace the demands of change.

Another important role of a principal is to maintain the focus of the vision as well as monitor it. This is accomplished by data-driven decision making which is a system of teaching and management practices that gets better information about students in the hands of classroom teachers (McLeod, 2004). Principals at a results-oriented school constantly ask themselves two questions:

- What evidence do we have that what we're doing is working?
- How will we respond when we find out that what we're doing is not working (McLeod, 2004)?

Principals in successful data-driven schools collect and analyze data and information pertinent to the educational environment. They ensure a system of accountability for every student's academic and social success. They also guarantee that their teachers follow the five major elements of data-driven instruction:

- good baseline data
- measurable instructional goals
- frequent formative assessment
- professional learning communities
- focused instructional interventions (McLeod, 2004)

If educators constantly analyze what they do and adjust to get better, student learning will improve (Schmoker, 1999). A major responsibility of the school system is creating and advancing a structure driven by a richly detailed, morally compelling vision of student learning, teaching, leadership, and professional development (Sparks, 2002).

Leaders are thought to be essential for high-quality education (Leithwood & Riehl, 2003). Principals must help teachers recognize what is working (and what is not) in their classrooms and vigorously support their faculty as they transform ineffective instructional practices into those that result in desired outcomes (McLeod, 2004). The school principal should always be viewed as the critically important faculty member, with broad responsibility for overall coordination and articulation of school programs (Glickman, 1998). Results-oriented leaders take the time to develop a deep understanding of both effective professional development practices and the content of the particular program that is being implemented. They also advocate a point of view that claims all students and teachers can learn and perform at high levels and consistently and persistently act in ways that are aligned with this deep understanding and point of view (Killion, 2002).

Instructional Program Coherence

Instructional program coherence plays an integral part in school change in a digital age. Quantitative analysis shows positive connections in a large number of schools between strengthening instructional program coherence and improving academic achievement in both reading and mathematics on the Iowa Tests of Basic Skills (Newmann, Smith et al. 2001). Evidence also suggests that students in Chicago elementary schools with stronger program coherence show higher gains in student achievement (Newmann, Smith et al. 2001).

Program coherence implies a unity of purpose, clear focus, and shared values for student learning. It exists when the following three conditions are met:

- A common instructional framework that guides curriculum, teaching, assessment, and the learning climate. This framework combines specific expectations for student learning with specific strategies and materials to guide teaching and assessment.
- Staff working conditions support implementation of the framework.
- The school allocates resources such as materials, time, and staff assignments to advance the school's common instructional framework and to avoid diffuse, scattered improvement efforts (Newmann, Smith et al. 2001).

As we look at creating a professional learning community, focusing on learning rather than teaching, working collaboratively, and holding oneself accountable for results (Dufour, 2004), then we must also include instructional program coherence as a part of this process.

Helping teachers work more effectively on problems of school improvement and directly increasing student engagement and learning are two ways that program coherence promotes student achievement. Students are more likely to learn when new learning connects to prior knowledge and experiences build upon one another. Research on motivation suggests that students are more likely to engage in the difficult work of learning when curricular experiences within classes, among classes, and over time are connected (Newmann, Smith et al. 2001). There also seems to be a direct correlation with instructional program coherence and providing authentic learning experiences for students. These two seem to work inexplicitly together in promoting student achievement.

Instructional program coherence might also be expected to assist teacher learning and effectiveness. Teachers who participate in on-going, related professional development experiences as opposed to short-term, unrelated activities, are also more likely to learn from those experiences and to integrate that new knowledge into their teaching (Newmann, King et al. 2000). The solution is staff development built around collaborative exchange, in which teachers work together, reflect on their practice, exchange ideas, and share strategies. (Schmoker 2001). In addition, research on organizations and effective management indicates that professionals who work together on integrated activities aimed at clear goals produce higher quality goods and services (Newmann, Smith et al. 2001).

Key factors associated with creating instructional program coherence in schools include the following:

- Sustained organizational focus
- Staff agreement on clear and specific goals
- More common academic expectations and curriculum for all students
- Teacher collaboration and collective responsibility for meeting goals
- Consistent climate of positive supports and high expectations for all students and staff (Newmann, Smith et al. 2001).

Challenges associated with creating instructional program coherence reflect demands on schools to produce multiple diverse learning outcomes (e.g. good behavior, basic skills, advanced conceptual understanding, and building self-esteem). Taken together, the press toward separate programs for different learning goals and different students makes it difficult for teachers to work from a common instructional framework

(Newmann, Smith et al. 2001). Also, convincing a staff to accept a common instructional framework can be seen as overwhelming since it requires ongoing agreement, cooperation, and training on the part of both old and new staff members. Finally, uncertainty about how best to teach and assess student learning effectively tends to encourage a trial and error approach, rather than a common, coordinated approach to instruction. There also exist factors beyond schools such as independent providers of school assistance and publishers who accept the school's priorities, rather than insist that the school work toward stronger instructional program coherence.

The most straightforward implication of these findings is that leaders in schools, in school improvement organizations, and in district, state, and federal agencies should give more deliberate attention to strengthening instructional program coherence within schools (Newmann, Smith et al. 2001). Instructional program coherence plays a predominant role in implementing and sustaining lasting school improvement.

Building Leadership Capacity

Effective leaders also promote the building of leadership capacity at their schools. In developing leadership capacity, time is essential in order to slow down and form relationships that focus on student learning. Possessing a shared purpose, inquisitiveness, and reflection presents a framework for synergy and self-organization both of which help a staff think about experiencing time in a different, more positive way (Lambert, 2003). Time is essential to achieving anything of importance and for lasting school improvement.

Five key ideas are essential to maintaining leadership capacity: a sustained sense of purpose, succession planning and selection, enculturation, a rhythm of development,

and a conversion of practice into policy (Lambert, 2003). A sustained sense of purpose requires a school to constantly revisit their vision and sense of purpose. Succession, planning, and selection require administrative appointments that will respect a school's purpose and not fear progress. Enculturation supports new personnel in joining the professional learning community and includes orientation, mentoring, coaching, and sharing resources. The ultimate goal of enculturation is the seamless transition of leadership. A rhythm of development is a necessity if staff members are to maintain their energy, focus, and enthusiasm for learning. Educating teachers on working smarter not harder is a key element of rhythm and development. Finally, practice as policy refers to the importance of distinguishing between policies that facilitate the development of leadership capacity and those that compound bureaucratization (Lambert, 2003).

Effective leadership requires broad involvement and collective responsibility for students to learn. Successful principals distribute leadership among teachers who then perform key roles in the school improvement process (Sparks, 2002). Teacher leaders are those who dream of making a difference in their schools. They are instrumental in forming interdependent learning communities by helping colleagues (mentoring, coaching) and believing in shared values. Teacher leaders build relationships with colleagues, promote shared decision-making, and create opportunities to engage others in futuristic thinking. Principals of high performing schools constantly encourage teacher leadership as opposed to being threatened by it. They realize the power of shared leadership as they build lasting communities of school improvement.

Distributing Leadership in Schools

In the most effective schools, every member of the education community is responsible and possesses the authority to take on appropriate leadership roles (Neuman & Simmons, 2000). The definition of leadership broadens to encompass teachers, staff member, parents, and members of the entire education community (Neuman & Simmons, 2000). Five principles of distributed leadership exists for schools: (1) purposeful leadership that promotes the improvement of instructional practices and performance, regardless of role, (2) instructional improvement which involves continuous learning, (3) learning which necessitates modeling, (4) the roles and activities of leadership revolve around the expertise required for learning and improvement, not from the formal orders of the institution, and (5) the exercise of authority requires a reciprocal relationship of accountability and capacity (Elmore, 2000).

Leadership roles enable teachers to move out of their isolated classrooms and to experience personal and professional satisfaction in improving their schools (Barth, 2001). Teachers gain a sense of investment and membership in the school community, a new learning about schools, and the process of change within themselves (Barth, 2001). The ultimate results spill over into the classroom setting where teacher professionals become owners and investors in the school as opposed to merely being tenets (Barth, 2001). Skillful leadership on the part of principals and teachers is crucial if schools are to become communities of learning for both students and educators (Sparks, 2002).

Professional Development

Leaders see professional development as a necessary investment for themselves. They also recognize quality professional development as the key strategy for supporting

significant school improvements. The most powerful forms of professional development for principals are standards-based and embedded in their daily practice (Sparks, 2002). The National Staff Development Council divides standards for staff development into the three areas of context, process, and content emphasizing the importance of working simultaneously on all three areas (Hirsh, 2006). Context standards emphasize learning communities, leadership and resources. Process standards support data-driven decision-making, evaluation, learning, design, collaboration, and research. Content standards promote equity, quality teaching, and family involvement. Effective professional development is about carefully considering and planning according to desired outcomes and standards that will contribute to that success (Hirsh, 2006).

Staff development that advances the learning of all students requires skillful school and district leaders who guide continuous instructional improvement. Powerful professional development utilizes information related to student learning in a multitude of ways (Sparks, 2002). Schools that have dramatically improved student achievement do so with an investment in human capital, their teachers (Killion, 2002). The professional learning of teachers not only promotes school-wide change but also student learning and achievement (Murphy & Lick, 2005). Teacher quality is the most critical aspect of school and student success and a direct impact on student learning (Ferguson, 1991). Deeper content knowledge, more content-specific instructional strategies, and greater understanding about how students learn will better enable teachers to craft instruction to meet the varying needs of students and to help them achieve rigorous content standards (Killion, 2002).

Mounting pressure from reform initiatives and national efforts to improve student achievement like the No Child Left Behind (NCLB) Act of 2001 are sparking a reevaluation of existing models of teacher professional development (Richardson, 2007). This instrumental change shifts the primary design from a stand-alone workshop to teacher learning that is embedded in daily practice, promotes high-quality instructional development, and directly links to student learning (Dufour, 2004; Moyer, Dockery et al. 2006). Principals incorporate educational practices inclusive of all faculty members to attain the simultaneous goals of quality professional learning for teachers and academic learning for all students (Mullen & Hutinger, 2008). The most powerful forms of professional development focus on a small number of goals for improved student learning (Fullan, 2001).

Job embedded professional development occurs during work hours and is associated with learning activities that support instructional needs (Moyer, Dockery et al. 2006). This professional development incorporates a mix of strategies for supporting staff learning in implementing and refining instructional strategies that aid students in reaching academic standards (Hirsh, 2004). Influential professional development matches adult learning processes with the intended learning outcomes for students and the desired instructional practices for teachers (Sparks, 2002). Additionally, teachers' learning needs to be integrated into daily use through inquiry, reflection, and analysis of student work and professional practice (Speck & Knipe, 2005). Principals can scaffold such learning through the practices of peer coaching, co-teaching, observing model lessons, visiting other classrooms, using protocols to reflect on students work, teacher mentoring, and study groups (Mullen & Hutinger, 2008). Lead teachers and instructional

coaches can also support professional growth for staff and ensure that the staff learning process itself is differentiated and that new staff knowledge and skills are applied in the classroom level on a continuous basis. School reform is more probable when teacher learning is facilitated daily (Moyer, Dockery et al. 2006).

When given time for collaboration, teachers can expand (or improve upon) instructional strategies, design successful lessons, focus on student achievement, increase their understanding of subject-are content and benchmarks, and address teaching problems (Hirsh, 2003). Reports state that students whose teachers receive professional development score better on assessments than students who do not have the benefit of such teacher practices (Wenglinski, 2000). Staff development that is coherent and sustained over time, focusing on student learning, engaging students, incorporating higher-order thinking, and building a learning community produces greater results for educators and students (Wenglinski, 2000).

Two integral components of job-embedded professional development are study groups and peer coaching. The study group is an element of a larger framework of a professional learning community that allows school practitioners to study relevant research and teaching strategies to impact student achievement and school culture (Guskey & Huberman, 1995; Hirsh, 2003; Murphy & Lick, 2005). Study groups possess a unique design that allows them to facilitate change in teacher practice and improve student outcomes (Moyer, Dockery et al. 2006). Although classroom teachers are managers of instruction, objects of change, and facilitators of student learning, the principal is the crucial factor in the success of study groups (Sparks, 1997; Drago-Severson, 2004; Darling-Hammond, 2006; Schmoker, 2006). The principal prioritizes

the professional growth of the school staff and ensures that they receive professional development opportunities that expand their instructional knowledge base (Murphy & Lick, 2005). From this viewpoint, the school leader is instrumental in developing and sustaining study groups (Murphy & Lick, 2005). "The school itself needs to become a major focus for the professional development of the professional staff—and this includes the principal of the school as well" (Eisner, 1995, p. 104). Learning to teach and to lead is a lifelong professional activity and not something that can be learned in a leadership development program (Yee, 1997). In order to get better at their work educational leaders need to have constructive feedback regarding their daily work on an on-going basis. Traditionally schools have been structured in ways that isolate staff; instead structures need to be created which make it possible for teachers, principals and superintendents to see and to talk with each other about their work (Yee, 1997).

Researchers advocate the concepts of situated cognition and cognitive apprenticeship as a way of improving the quality of administrative training programs by placing greater emphasis on the social and cultural context in which learning takes place (Begley, 1995; Prestine & LeGrand, 1991). In such programs, learning is viewed as active, collaborative and authentic, and the focus is on the processes educational leaders use in actual practice to solve real-life problems (Yee, 1997). Use of authentic problems and settings promotes a transfer of knowledge from the instructional setting to a real-life administrative setting (Baron & Uhl, 1995; Cordeiro & Campbell, 1995; Leithwood & Steinbach, 1992). For transfer of knowledge and skills which are subject to routine and frequent use, it is helpful to provide multiple opportunities for practice across a wide variety of problem types, feedback about the adequacy of performance, and additional

opportunities for guided practice (Yee, 1997).

Coaching during the implementation process enables the learner to practice new skills and strategies under the direct support and guidance of an expert administrator. The skilled coach already possesses sophisticated cognitive structures to guide performance and the knowledge of how best to provide feedback. "As a consequence, such a person is likely to facilitate improvement in the learner's guiding schema and actual performance much faster than if the learner has available only his or her own analysis of performance discrepancies" (Leithwood & Steinbach, 1992, p. 324). Coaching can provide the learner with the confidence to undertake new initiatives as well as with the technical assistance needed to do so successfully. "Moreover, unless principals acquire skill mastery, they may do more harm than good during the implementation process" (Hallinger & Anast, 1992, p. 427). In addition, coaching provides a distinctive form of accountability. With the awareness that a colleague or instructor will be coming to coach, there is additional impetus for a learner to engage in implementation (Yee, 1997).

Peer, Technical, Cognitive, and Instructional Coaching

In the 1980's, the work of Joyce and Showers embodies the belief that modeling, practice under simulated conditions and practice in the classroom, combined with feedback is one of the most prolific training designs in education (Joyce & Showers, 1980). Looking for a term that facilitates transfer and refraining from using the term "supervised practice," Joyce and Showers are among the first to use the term coaching in conjunction with teachers learning new skills (Brandt, 1987, p.12). Their research finds that teachers attempting to master new curriculum and instructional approaches need

ongoing technical assistance at the classroom level (Showers & Joyce, 1996). Results of their early studies solidify this assumption and show that teachers who participate in a coaching relationship by sharing aspects of teaching, planning together, and pooling their experiences practice new skills and strategies more frequently and apply them more appropriately than their counterparts who work in isolation (Baker & Showers, 1984).

Similar in methodology, technical coaching, team coaching, and peer coaching focus on innovations in curriculum and instruction (Kent, 1985; Neubert & Bratton, 1987; Rogers, 1987). Specifically the principles of peer coaching revolve around the following four principles:

- Entire faculties agree to be members of peer coaching study teams that collectively practice or utilize the change the faculty decides to implement, support one another through the process, and collect data on the implementation process relative to students as well as the school's goals.
- The primary function of peer coaching study teams is the planning and development of curriculum and instruction in the pursuit of shared goals through collaborative planning and with the intentional omission of verbal feedback.
- Peer coaching redefines the meaning of coach to encompass pairs of teachers observing each other where one teacher who is instructing is considered the coach and the teacher observing is considered the coached. In this way technical feedback is forsaken in favor of collegial discourse.
- The collaborative work of peer coaching transcends observations and conferences to include teachers learning from one another "while planning instruction, developing support materials, watching one another work with students, and

thinking together about the impact of their behavior on their students' learning" (Showers & Joyce, 1996, p. 5).

Growing out of the work of Joyce and Showers, "technical coaching helps teachers transfer training to classroom practice, while deepening collegiality, increasing professional dialogue, and giving teachers a shared vocabulary to talk about their craft," (Garmston, 1987, p. 18). Technical coaching typically follows staff development workshops in specific teaching methods pairing consultants with teachers or teachers with one another (Garmston, 1987). Although positive effects such as (1) practicing new instructional strategies with greater frequency and skill, (2) using new strategies more appropriately, (3) retaining information in relation to strategies for longer periods of time, (4) teaching the new learned strategies to students, and (5) possessing a greater understanding of the purposes and uses more clearly are evident not all teachers are proponents of the technical coaching model (Garmston, 1987). Certain technical coaching practices limit collegiality and professional discourse in addition to having an evaluative component where there is a tendency for teachers to give each other advice or constructive criticism. The assumption in technical coaching is that objective feedback given in a non-threatening and supportive climate improves teaching performance (Garmston, 1987).

Conversely, collegial coaching helps teachers to establish open professional dialogue more rapidly due to suspension of judgment. The primary goals of collegial coaching revolve around the refining of teaching practices, deepening collegiality, increasing professional discourse, and helping teachers to reflect in greater depth about their work (Garmston, 1987). Conducted most often with pairs of teachers, the long-term

goal is self-coaching for ongoing, improvement in existing practices (Garmston, Linder et al. 1993). In collegial coaching, the observed teacher selects the area of focus and the role of the peer coach is to observe, gather data, and help the teacher with their own analysis of practice realizing how their decisions affect student learning.

Research by Saphier and King (1985) identifies twelve school norms interacting with the central values of the school. Collegial coaching strengthens five of these norms - collegiality, experimentation, tangible support, reaching out to the knowledge base about teaching, and honest and open communication. If these norms are strong then instruction will be significant, continuous, and widespread, and if these norms are weak, improvements will be infrequent, random, and slow (Saphier & King, 1985). Collegial coaching can have positive, dramatic, and sustaining impact on the culture of a school.

Developed by Arthur Costa and Robert Garmston, cognitive coaching is defined as a set of strategies, a way of thinking and way of working that invites self and others to shape and reshape their thinking and problem solving capacities (Costa and Garmston 2002). A convergence of the authors' professional experiences laid the foundation for the cognitive coaching model. In the early 1970's pioneering work by Art Costa and Nabuo Watnaebe leads to the development of a strategy for helping school administrators understand and apply more humanistic principles to teacher evaluation. In addition, utilizing the clinical supervision model of Morris Cogan and Robert Goldhammer, the group outlines the basic structures of the pre-conference, the post-conference, and identifies three goals of evaluation: trust, learning, and autonomy. These goals and processes indicate key concepts in Cognitive Coaching (Costa and Garmston 2002) which is developed in 1984 in response to an oppressive evaluation system in California.

Costa, highly influenced by leaders in education and cognitive development, teams with Garmston at California State University as they develop the first formal expression of Cognitive Coaching testing their ideas with staff developers at a statewide conference. By the summer of 1985, interest in the Cognitive Coaching model ignites the formation of the Institute for Intelligent Behavior, an association committed to facilitating training for educational and corporate agencies in order to support their members' growth toward self-directed learning (Costa & Garmston, 2002). By 1994, the first edition of Cognitive Coaching A foundation for Renaissance Schools is published and the Center for Cognitive Coaching is firmly established to provide leadership training and serve as a resource to schools nationwide.

Cognitive Coaching is a framework supported by the assumption that teachers possess the capacity to reflect on their teaching practice and self-direct their actions based upon new information brought forth through their work with a coach (Abrams, 2001). Nonjudgmental, developmental, and reflective are all adjectives describing the cognitive coaching model which derives from a blend of the psychological orientations of cognitive theorists and the interpersonal bonding of humanists (Costa & Garmston, 2002). Current brain research, constructivist learning theory, and practices that optimize learning enlighten the Cognitive Coaching model. The mission of Cognitive Coaching is to produce self-directed persons who possess the cognitive capacity for high performance, both independently and as member of community (Costa & Garmston, 2002).

Essential to the model is the focus on a teacher's cognitive development tied to the belief that growth is achieved through the development of intellectual functioning. The coaching interaction focuses on mediating a practitioner's thinking, perceptions,

beliefs, and assumptions toward the goals of self-directed learning increasing the complexity of cognitive processing (Costa & Garmston, 2002). Cognitive Coaching is systemic, rigorous, data-driven and influences another person's thought processes through self-management, self-monitoring, and self-modification. In this way, an individual's capacity for self-directed learning grows and expands (Costa & Garmston, 2002).

Integral to Cognitive Coaching are the five states of mind which serve as diagnostic constructs assessing the resourcefulness of others and planning meaningful interventions. The following five states of mind drive, influence, motivate, and inspire our intellectual capacities, emotional responsiveness, and high performance, and productive human action(Costa and & Garmston, 2002):

- Consciousness – Maintaining one's own values, intentions, thoughts, and behaviors and an awareness of what is going on in the moment, examining actions and effects.
- Efficacy – Knowing that one has the capacity to make a difference and being willing and able to do so while engaging in cause-an-effect thinking, posing problems, and searching for problems to solve.
- Flexibility – Knowing one has and can develop options to consider and being willing to acknowledge and demonstrate respect for empathy and diverse perspectives.
- Craftsmanship – Seeking precision, refinement and mastery while striving for exactness of critical thought processes generating clear visions and goals.

- Interdependence – Contributing to the common good and being willing to create, alter relationships, and utilize group resources to benefit one's work. Altruistic, seeking collegiality, a sense of patriotism and volunteerism, are all characteristics of interdependence.

Encompassing all of the five states of mind and functioning at one's personal best is said to be holonomous. A term coined by the physicist, Arthur Koestler (1972), it combines the Greek roots: holes meaning whole, and on meaning part. Holonomy communicates the concept that an entity is both an autonomous unit and a member of a larger whole simultaneously (Koestler, 1972). Vygotsky (1978) suggests that intelligence grows in the following two ways: one is the intelligence that develops through one's own experiences and the other is when our intelligence is shaped through reciprocity with others (Vygotsky, 1978). Active listening, conflict resolution, consensus building, and receiving feedback actually increase our intelligence (Costa & Lipton, 2001). Therefore, a holonomous person is competent, confident in their individuality in an organization, and at the same time critical to the effective functioning of the organization (Costa & Garmston, 2002). An individual accomplishes growth in holonomy both internally with individuals and through thoughtful interactions with others (Feuerstein, Feuerstein et al. 1997).

The guiding principle of cognitive coaching revolves around the premise that instructional behaviors will not be affected until a teacher's inner thought processes are altered and rearranged (Barnet, 1995). "It differs from other forms of coaching, mentoring, supervision, and peer review in that it mediates invisible, internal mental resources and intellectual functions" (Costa & Garmston, 2002). The coach is critical to

this process and uses instructional strategies which promote reflection enhancing their coaching partner's capacities for expert thinking and problem solving (Barnet, 1995). The goals of cognitive coaching include:

- establishing and maintaining a trusting relationship between the coach and partner;
- developing the mental capacities and perceptions of the coach and partner;
- permit novice partners to become autonomous, self-dependent learners (Barnet. 1995).

Cognitive Coaches focus on the thought processes, values, and beliefs that motivate, guide, and influence overt behaviors while simultaneously helping that person to develop skill in planning, reflecting, problem solving, and decision-making (Costa & Garmston, 2002). These are the hidden skills of being a teaching professional, yet they lie at the heart of all the choices a teacher makes on a daily basis. The Cognitive Coach must take a non-judgmental stance utilizing tools of reflective questioning, pausing, paraphrasing, and probing for specificity asking the partner to suggest what should be done. Being non-judgmental is paramount in separating cognitive coaching from other forms of coaching where the focus is on the other person's perceptions, thinking, and decision-making processes to mediate resources for self-directed learning (Costa & Garmston, 2002).

Since the goal of cognitive coaching directly relates to the enhancement of teacher thoughts about classroom practices, a typical sequence of events outlines the coach and teacher exchange. The first step is an initial planning conference held before the first classroom observation. The planning conference is an opportunity to build trust between

the coach and teacher in conjunction with understanding the teacher's instructional goals for the lesson and thought processes. Guidelines for the collection of data for monitoring and the reflecting conference are also set at this time.

The coach serves in the capacity of a data collector while the teacher serves in the role of the experimenter and researcher (Costa & Garmston, 2002). The teacher/planner constructs the system for collecting the data while coaches clarify what needs to be recorded, gather the data, and refrain from making subjective judgments during their observation time. The reflecting conference follows after a significant period of time elapses after the lesson allowing for deeper processing and self-analysis. This intervening time allows for extensive self reflection and is critical before the reflecting conference takes place. The primary role of the coaching mediator is to help to engage and to enhance a colleague's cognitive and emotional capacities as a self directed learner. Ultimately, mediators work to build capacity for another person to become self-coaching.

Many times when professionals or peers with similar roles establish a coaching relationship it is referred to as peer coaching. Cognitive Coaching more specifically refers to the identity that mediators assume, the coaching maps and tools with which they work, the desire for enhancing other's self-directedness and faith in the human capacity for meaning-making (Costa & Garmston, 2002). Peer coaching may describe with whom you coach; however Cognitive Coaching defines how you coach (Costa & Garmston, 2002).

A nationwide increase in the occurrence of coaching as a professional development strategy can be directly attributed to the mandates in the No Child Left Behind (NCLB) Act of 2001. Specifically, NCLB requires that schools that do not make

adequate yearly progress (AYP) for two consecutive years develop and implement a school improvement plan that includes professional development programs which incorporate activities, like coaching, which are provided consistently over time. Although a uniform definition of an instructional coach fails to exist, Kowal and Steiner (2007) describe an instructional coach whose primary professional responsibility is to bring practices that have been studied using a variety of research methods into classrooms by working with adults rather than students.

Several studies have demonstrated that when teachers participate in standard in-service training, they apply less that 20% of their learning back into their classroom teaching (Showers, Joyce et al. 1987). By offering support, feedback, and intensive, individualized professional learning, instructional coaches represent a better way to improve instruction and allow real change to occur (Knight, 2006). Recent studies on coaching (Poglinco, Bach et al. 2003; Richard, 2003; Neufeld & Roper, 2003) emphasize that coaches may be specialized staff developers (full or part-time), or they may be teacher leaders making a career transition into coaching. Coaches frequently work one-on-one with a teacher directly in the classroom, meeting with the teacher before/after a lesson, and utilizing student work as an impetus to talk about instructional strategies (Feger, Woleck et al. 2004). Coaches must receive specific knowledge and skills to be effective in their positions if coaching is defined as a form of inquiry based learning characterized by collaboration between individual, or groups of, teachers and more accomplished peers (Poglinco, Bach et al. 2003).

Current research points to three extensive categories of skills that an effective coach possesses: pedagogical knowledge, content expertise, and interpersonal skills

(Kowal & Steiner, 2007). Successful coaches possess a thorough understanding of how children learn, are skilled in developing and differentiating instruction, and expert classroom managers. Their status as an accomplished teacher also makes them more likely to earn teachers' trust. In the area of content, they possess a thorough knowledge of the subjects that they are coaching and a familiarity with the curriculum that teachers are currently using (Kowal & Steiner, 2007). Along with pedagogical knowledge and content expertise it is essential that coaches have strong interpersonal competencies that reflect a high level of people skills with the ability to build relationships, establish trust/credibility, and tailor assistance to an individual teacher's needs (Kowal & Steiner, 2007). Adult learning improves by behaviors that demonstrate respect, trust, and concern for the learner, and adults want to be the originators of their own learning – involved in selecting objectives, content, activities, and assessments (Little, 1982).

Three significant aspects to surviving and thriving as a coach: disposition, process, and prioritization explain the need for thorough and ongoing professional development of instructional coaches (Herll & O'Drobinak, 2004). Research suggests that coaches need ongoing training in three content areas: their particular subject area, pedagogical techniques that are unique to the population of teachers that they are working with, and universal coaching strategies (Kowal & Steiner, 2007). In addition, coaches who participate in training that encourage them in self reflection in relation to their own practice as coaches perform better than untrained coaches (Veenman & Denessen, 2001). A coach's training also needs to be ongoing and provide multiple opportunities for collaboration with other coaches.

Districts must commit themselves to providing coaches with responsive, participatory professional development that is constantly re-evaluated to ensure the depth and breadth of knowledge that coaches need for their work (Neufeld & Roper, 2003). Neufeld and Roper (2003) outline the following six essential elements of professional development for coaches:

- Ensure that coaches are made aware of the reasons for reform efforts and understand the magnitude of the change efforts
- Develop a strong, focused, orientation program for new content with strong program coherence for change coaches
- Develop differentiated professional development opportunities for veteran coaches
- Ensure that coaches are made aware of the learning needs of special student populations
- Ensure that coaches and teachers are hearing the same message
- Provide opportunities for some coaches to become coaching leaders

Peer-to-peer learning can be effective when one colleague possesses great experience and the coach can be coached suggesting that learning and practice are closely linked together situated in the activities and culture in which the learning takes place (Lave & Wenger, 1991). In addition to learning from their peers with different levels of experience, coaches are able to transfer learning from other professional development experiences to their own. Known as reciprocation, participants gain insights into practices and experiences that differ from their own through peer discussions which compliment their own knowledge (Nooteboom, 2000).

Although assessment is an integral part of teaching, the accurate evaluation of coaching programs remains nebulous and elusive. Currently, no research studies clearly show how to best evaluate an instructional coaching program. By utilizing a variety of methods however, such as teacher surveys, classroom observations, interviews, and analysis of student achievement data a program's impact can be assessed on three levels: teacher perception, instructional practice, and improved student learning (Kowal & Steiner, 2007).

Effective staff development has essential elements – ongoing, job embedded, specific to grade levels or academic content, utilizing research-based approaches and instructional strategies creating more collaboration with a sense of community among teachers in a school (Russo, 2004). School-based coaching meets many of the standards set forth by the National Staff Development Council (NSDC), the nation's largest professional association dedicated to improving teacher professional development. Recommendations in the latest NSDC standards, adopted in 2001 include:

- Organizes adults into learning communities whose goals are aligned with those of the school and district.(Learning Communities)
- Requires skillful school and district leaders who guide continuous instructional improvement. (Leadership)
- Requires resources to support adult learning and collaboration. (Resources)
- Provides educators with the knowledge and skills to collaborate. (Collaboration)
- Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards,

and prepares them to use various types of classroom assessments appropriately. (Quality Teaching)

- Provides educators with knowledge and skills to involve families and other stakeholders appropriately. (Family Involvement)

(NSDC, 2001)

Coaching within the Context of Professional Learning Communities

Instructional coaching is most effective in sustaining change when it occurs within a successful professional learning community (PLC). At the heart of this community is a belief in the need for continuous school improvement tied to student learning and academic achievement. Building on previous work on PLCs, lesson study, examining student work, and standards based instruction, Southwest Educational Development Laboratory (SEDL) develop the Professional Teaching and Learning Cycle (PTLC) (Tobia, 2007). This six phase process consists of two collaborative meetings where groups of 2-8 teachers meet for a period of 2-3 hours to examine student achievement data from state tests or benchmark assessments aligned to state standards, select an effective strategy to address those standards, and plan an effective lesson using that strategy. Returning to their classrooms, teachers implement the lesson and reconvene a few weeks later in a second collaborative meeting to analyze student work generated during the lesson with the ultimate goal of adjusting future instruction (Tobia, 2007).

Based on Marzano's work on classroom instruction and the importance of a guaranteed, viable curriculum (Marzano, 2001), the PTLC also encompasses the process standards of NSDC: encouraging teacher collaboration; focusing on job-embedded

learning; using a systemic improvement strategy; connecting learning to a set of standards; and monitoring progress of teachers and students (Tobia, 2007). Divided into the following six phases the model provides structure and clear direction for teachers as they begin to work together to improve instruction:

Phase I: Study – Teachers meet in collaborative groups critically examining learning expectations from the state standards and reaching common understandings of how to meet the expectations of these standards.

Phase II: Select – Based on the study of the standards, collaborative planning teams research and select specific instructional strategies and resources for impacting learning and meeting the state standards.

Phase III: Plan – Continuing to work in collaborative planning teams, teachers formally design a lesson incorporating the studied strategies and agree on a common assessment that will demonstrate evidence of student learning in the analysis phase.

Phase IV: Implement – Instructors teach the planned lesson, noting student interactions, challenges, and successes gathering the predetermined evidence of student learning.

Phase V: Analyze – Operating again in collaborative teams, teachers examine student work and discuss the student's understanding of the standards based on the evidence provided.

The PTLC model provides a continuum for teacher collaboration ensuring instructional program coherence and it also provides a way to focus professional development while allowing for individual differences. Teachers need guidance and training in examining student data, studying the standards, developing protocols for looking at student work, and in using multiple approaches to adjust instruction when

student mastery of the standards is absent. Leaders must create a climate that promotes open, trusting relationships and collaboration among all staff members (Tschannen-Moran, 2004) paying close attention to the implementation process. Researchers focusing on implantation of the PTLC model identify six key leadership traits (Hord, 1992).

1. Create an atmosphere and context for change that reflects a safe, orderly environment governed by trust with high expectations for teachers and students where everyone is held accountable for results.
2. Develop and communicate a shared vision for change that articulates a clear vision of what should be happening in classrooms to improve student learning.
3. Plan and provide resources that support the school improvement process including time, materials, personnel, and fiscal resources.
4. Invest in focused professional development designed to support teachers in deepening their content knowledge and examining student data to inform instruction.
5. Check progress to monitor the effectiveness of the PTLC model formally and informally.
6. Give continued assistance to teachers through focused professional development opportunities, on-site content and instructional support, and resources.

Although complex, the PTLC is a powerful tool for learning new strategies to help students succeed as well as implementing and testing these strategies to bring standards to life in the classroom (Tobia, 2007). The PTLC seems to embody all of the qualities of good teaching reflecting an attitude of curiosity combined with a willingness to actively

experiment with research-based practices, assess, examine results, and develop new theories in a continual cycle of school improvement.

Technology Leadership

The rise of the Window-enabled PC, which really popularized computing, eliminated another hugely important barrier: the limit on the amount of information that one single individual can amass, author, manipulate, and diffuse (Friedman, 2005). After the launching of the World Wide Web in 1991, the number of users skyrocketed from 600,000 to 40 million in five years and at one stage the number of users doubled every 53 days (Friedman, 2005). The implication for the students of today is that they have grown up in a digital childhood and adolescence. Known as the Net Generation, they handle expanding technology with an ease and an approach which is different from that of the baby boomer generation (Coates, 2008). It is a generation of skimming computer screens as opposed to starting to read at the upper left corner of the window (Veen, 2006). Students dictate their goals by relevance and once identified they speedily navigate through digital environments, multi-tasking, processing multiple inputs of information at a time, and create their own meaning (Coates, 2008).

As the students of the Net Generation move through the education system, they are often exposed to dated materials and manipulatives and not to the digital media to which they are accustomed (Annetta, 2008). While the majority of people born before 1980 are playing catch-up and moving through the virtual world with mechanical stiffness, student scores continue to regress in grades 3-12 and technical jobs in the United States continue to be outsourced. (Annetta, 2008; Coates, 2008). In the area of technology in relation to schools, the technology challenged all too often tries to lead the

enlightened (Coates, 2008). It is critical to expose and challenge the Net Generation in engaging environments that motivate, explore, experiment, and allow students to construct their own knowledge (Annetta, 2008).

This information technology creates sizable demands and extraordinary opportunities for schools and their leaders (Principals for our Changing Schools, 1990; Townsend, 1996). Utilizing human talent and initiative is paramount to learning with administrators playing a pivotal role in determining technology usage in schools (Villano, 2008). The charge for educational leaders is to utilize local talent to recognize and accomplish the mission of changing, globally-driven schools (Principals for our changing Schools, 1990). National Education Technology Standards (NETS) for administrators delineate what administrators need to know and be able to do in order to fulfill their responsibility for effective leadership for technology. Representing a consensus among educational stakeholders, the following six standards represent the core beliefs for inclusive and suitable use of technology in schools:

- Educational leaders inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision.
- Educational leaders ensure that curricular design, instructional strategies, and learning environments integrate appropriate technologies to maximize learning and teaching.
- Educational leaders apply technology to enhance their professional practice and to increase their own productivity and that of others.

- Educational leaders ensure the integration of technology to support productive systems for learning and administration.
- Educational leaders use technology to plan and implement comprehensive systems of effective assessment and evaluation.
- Educational leaders understand the social, legal, and ethical issues related to technology and model responsible decision making related to these issues. (Collaborative, 2001)

Studies at the K20 Center at the University of Oklahoma verify that learning community development and technology integration are mutually influential, reciprocal, and supportive (Atkinson, 2005; Cate, Vaughn et al. 2006; Williams, 2006). Technology integration processes enhance collective learning that contributes to the development of a community of learners (Riel & Fulton, 2001; Burns, 2002; Dexter, Seashore et al. 2002; Williams, Atkinson et al. 2007). Teachers working together in the integration of technology collectively gain knowledge, share best practices, and work collaboratively in building leadership capacity (Williams, Atkinson et al. 2008). They understand that to use educational technology effectively, teachers create a vehicle that will encourage students to think about what they need to learn and to ask their own questions.

Technology lends itself to exploration. If used effectively, educators will see the value of exploration as real teaching and real learning. Successful school leaders educate teachers to utilize technology in authentic ways. Today's students utilize MySpace, YouTube, blogs, wikipedia, and podcasts at an ever increasing pace and in ways that are helping to define a new generation information gathering and information-creating (Robin, 2008).

Unfortunately, when it comes to using these technologies in the classroom, many teachers still do not have an adequate knowledge base on how to utilize them in their teaching (Robin, 2008). Teacher training and time for self-directed learning are essential in expanding teacher familiarity, confidence, and skill in choosing software and integrating technology into the curriculum (Judge, Puckett et al. 2004). Technologies are too complex and the need to integrate them into the classroom is too urgent to leave teachers unsupported (Villano, 2008). The digital age brings tremendous changes in the consideration and implementation of professional development for technology. Constructivist techniques that allow teachers the opportunity to get their hands on technology and instructional coaches who are highly trained to work with school staff provide meaningful professional development for staff members (Villano, 2008). Student support teams also inspire teachers to begin to change their thinking and begin to see the kind of integrated technology use that benefits students and prepares them for the 21st century (Villano, 2008).

Leadership Development of Today's Educators

Past research indicates that beginning principals struggle at delegating authentic leadership responsibilities, utilizing collaborative decision-making, developing systems and systemic thinking (Leithwood & Steinbach, 1999; Fullan, 2005). However, shared leadership permeates every aspect of a Professional Learning Community. For this framework to be successful in schools, principals must possess the skills to engage teachers in collaboration and the courage to nurture their leadership capabilities. Yet study after study illustrates that the training principals typically receive in university programs and from their own districts isn't preparing them for their roles as instructional

leaders. An astounding 80 percent of superintendents and 69 percent of principals think that leadership training in schools of education is out of touch with the realities of today's districts, according to a recent Public Agenda survey (Darling-Hammond, LaPointe et al. 2007).

Unfortunately, educational administration preparation programs continue to be perceived as failing to meet the challenges of developing school leaders (Levine, 2005; Murphy, 2006; Elmore, 2007; Levine & Dean, 2007). So how do we prepare principals who can successfully transform schools in the 21st century and what is the current status of leadership development in our nation? Commissioned by the Wallace Foundation, *The School Leadership Study: Developing Successful Principals* is an instrumental research effort searching for the answers to these questions. The study investigates eight exemplary pre-and in-service program models that concentrate on pivotal issues in developing strong leaders. The research indicates that successful pre-service programs share the following common elements:

1) Strong program coherence exists between the viable curriculum and state mandated standards especially the ISSLC standards providing a foundation for instructional leadership.
2) Leadership of instruction and school improvement are the focal points of school philosophy and curriculum.
3) Instruction is student-centered, integrating theory into practice and emphasizing reflection. Instructional strategies include a myriad of approaches such as problem-based learning, action research, field-based

projects, journal writing, and portfolios with ongoing feedback and assessment playing a pivotal role in the learning process.

4) Faculty and staff possess knowledge in their subject areas.
5) A cohort structure exists that supports formalized mentoring and advising by skilled principals.
6) School personnel purposefully recruit and select accomplished teachers who exhibit leadership potential.
7) Well-designed, supervised, and meaningful administrative internships exist that provide candidates the opportunities to engage in leadership tasks for extended periods of time under the supervision of expert administrators.

(Darling-Hammond, LaPointe et al. 2007).

Exemplary in-service programs for educational leaders also share common elements characterized by a shared vision for teaching and learning that offer a multitude of learning opportunities connected to theory and practice. Professional development is job-embedded and provides a clear model of instructional leadership. On-going school improvement efforts encompass observing and providing feedback to teachers, planning relevant professional development for teachers, utilizing data driven decision-making, and managing the change process (Darling-Hammond, LaPointe et al. 2007). Gaining skills in managing educational change is crucial to the beginning administrator since individual resistance to change is inevitable (Reeves, 2004). In addition to offering quality learning opportunities with a focus on curriculum and instruction, the programs also offer supports in the form of mentoring, participation in principals' networks and

study groups, collegial school visits, and peer coaching (Darling-Hammond, LaPointe et al. 2007).

In-service programs for educational leaders that are the most successful provide a seamless transition from pre-service preparation to induction. Mentoring by veteran expert principals continues to provide ongoing career support for the educational administrator. Leadership learning is organized around a model of grounded practice which values analyses of classroom teaching, ongoing supervision, and job embedded professional development that is connected to pertinent readings and discussions on school improvement. A collegial learning network also exists which supports principals through book discussions, study groups, mentoring, or peer coaching (Darling-Hammond, LaPointe et al. 2007). Beginning principals also need input on reassessing established ideas on power and authority so that leadership becomes more widely distributed and shared (Bullough & Baugh, 2008).

The success of these programs for educators gives hope that the necessary skills can be given to prepare educational leaders for the 21st century. Individual principals possess a confidence in building leadership capacity, feel more committed to their profession, and value collaboration as a means of improving instruction. By recruiting a diverse group of accomplished teachers into leadership programs, these courses address the crucial need of increasing the leadership workforce and expanding the instructional knowledge base. There exists a direct relationship between the knowledge and skills of those educators who enter the program and what kind of curriculum can be effective and what kind of leader will emerge (Darling-Hammond, LaPointe et al. 2007). The

utilization of professional standards is also paramount in providing an important tool for strengthening a program's focus on instructional leadership and school improvement.

In conclusion, it can be said that principal leadership is pivotal to the development of leadership capacity (Marzano, 2003). The role of today's principals is multi-faceted complicated by a global society which is redefining teaching and learning. Educational leaders must be provided access to outstanding pre-service and in-service programs that allow them to attain the necessary skills to be successful in their jobs. Aspiring principals need to participate in administrative internships and work with stakeholders, including teachers, teacher educators, community leaders and politicians who are engaged in school improvement efforts (Yee, 1997). Coaching enables the learner to practice new skills and strategies with an expert's support and guidance (Yee, 1997).

Effective educational leaders empower teachers who in turn empower students by nurturing their higher-order thinking skills through technology. Teaching students how to use critical thinking skills to understand, analyze, and evaluate technological resources and in turn utilize these resources in an effective way is one of the major skills needed for life in the 21st century (Wan & Gut, 2008). This information technology paradox creates considerable demands, as well as countless opportunities, for schools and their leaders (Principals for our Changing Schools, 1990; Townsend, 1996). Leaders must possess the skills to manage change and to create collaborative networks. The challenge for educational leaders is to use available talent to identify and accomplish the missions of changing, globally-driven schools (Principals for our Changing Schools, 1990). To adequately prepare teachers and students for the 21st century, a successful leader needs to do more, but certainly cannot do less j(Leithwood & Riehl, 2003).

CHAPTER THREE

Methodology

The purpose of this qualitative interpretive study was to describe the coaching experiences of educational administrators gaining greater understanding of how they develop the necessary skills to implement, lead, and support technology rich professional learning communities. The qualitative data was collected through semi-structured interviews with open ended questions and analyzed to determine the effectiveness of professional development, substantially influencing their growth as technology leaders from the perspectives of the participants as well as the coaches.

Qualitative inquiry is a complex process based on the philosophical assumption that reality is constructed by individuals interacting with their social worlds (Merriam, 1998). Due to this conviction, qualitative researchers do not impose a rigid framework on the social world; they do not generate formal hypotheses that are to be tested. Rather their goal is to learn what comprises important questions about the participants' lives from studying the participants themselves (Rossman & Rallis, 1998). Although guidelines exist in the literature, there is no precise formula on how to proceed with each qualitative research project lending its own uniqueness to interpretation and emergent design (Watt, 2007).

As a methodology, an interpretive qualitative study exemplifies the vital characteristics of research ─ the goal of eliciting understanding and meaning, the researcher as the primary tool of data collection and analysis, the use of fieldwork, an inductive direction to analysis and findings that are abundantly descriptive (Merriam, 1998). For this purpose, the desire to understand other perspectives requires a design

which allows participants the freedom to share perceptions, insights, personal experiences, feelings, and reflections. Utilizing interpretivism as a theoretical lens, this qualitative research model supported by the thematic analysis process was the best suited for this study. The researcher was looking at the way these individuals perceived their experiences as a whole exploring their understandings and actions in this social context.

The term qualitative refers to a research paradigm designed to address questions of meaning, interpretation, and socially constructed truths where the ultimate goal is deriving meaning from the perceptions of participants (Cook & Reichardt, 1979; Firestone 1987; Merriam 1988; Tashakkori & Teddlie, 2003). "Thematic analysis is a way of seeing" and encoding qualitative information (Boyzatzis, 1998, p. 1). Thematic analysis moves through three phases of inquiry – recognizing an important moment (seeing), encoding it (seeing it as something significant), and interpretation (Boyzatzis, 1998). Researchers use thematic analysis in a systematic way that increases their accuracy in understanding and interpreting observations about people, events, situations, and organizations (Boyzatzis, 1998). Coding is a way of relating the data to ideas about the data (Coffey & Atkinson, 1996). Making results from qualitative research accessible to others involves different ways of organizing and presenting the results (Miles & Huberman, 1984).

The interpretivist believes that there are many different roles that schools play in a multitude of contexts (Feinberg & Soltis, 2009). Interpretivism possesses a local rather than a global orientation (Feinberg & Soltis, 2009). The culture-bound frameworks of particular schools and the ways that individuals understand and act in specific social contexts are the primary concerns of interpretivists as opposed to finding general laws or

encompassing explanations (Feinberg & Soltis, 2009). Schools are perceived as places where groups and individuals interact through local, mutually understood rules (Feinberg & Soltis, 2009). Therefore, interpretivists view their main task as researchers to be that of describing what is going on in particular instances of schooling which requires an interpretation of the ways people think and act in schools (Feinberg & Soltis, 2009).

Interpretivism refers to approaches emphasizing the meaningful nature of people's participation in social and cultural life. Researchers working within this tradition analyze the meanings people confer upon their own and others' actions. Interpretivism is a way to gain insights through discovering meanings by improving one's comprehension of the whole. The primary assumption of interpretivism is that the whole needs to be examined in order to understand a phenomena. Interpretivists believe in multiple realities, not single realities of a phenomena, and that these realities can vary across time and place. Just as different artists might draw varied portraits of the same person or school, the interpretivist believes that there is no correct or true portrait of someone or some school (Feinberg & Soltis, 2009). The descriptions for the interpretivist are the interpretations (Feinberg & Soltis, 2009).

Bristish philosopher Peter Winch stresses the importance of interpretation by observing and that any kind of understanding involves the ability to determine when it is that events of the same kind are occurring (Winch, 1958). Since culture provides the larger context in which human messages are interpreted, it is likely that the same behavior will be interpreted differently from one culture to another (Feinberg & Soltis, 2009). According to this perspective, what is taken as a regularity in one cultural context may not be taken that way in another so the primary task of social research is not to

uncover universal laws of regularities that can be applied to any culture (Feinberg & Soltis). The primary task of social research is to uncover the specific framework that defines the rules and meaning of cultural life for a specific social group (Feinberg & Soltis, 2009).

For the interpretivist the object of study is to find out what is going on in a specific social situation and to discover the meaning that it has for the participants (Feinberg & Soltis, 2009). This kind of understanding is produced by exploring the meanings that such behavior has for the participants themselves. Researchers need to know how participants understand their own situations before beginning to think about describing their behavior. Ultimately, an interpretivist is interested in exploring ways that individuals understand their social situations and act in them (Feinberg & Soltis, 2009).

Thematic analysis is multi-faceted and can be used for the following purposes by the researcher as a way of:

- seeing (pattern recognition)
- making sense out of apparently dissimilar material
- examining qualitative information
- methodically observing a person, an interaction, a group, a situation, an organization, or a culture
- changing qualitative information into quantitative data

(Boyatzis, 1998).

Thematic analysis can offer a beneficial link between researchers of varying orientations and fields (Denzin & Lincoln, 1994; Miller & Crabtree, 1992).

The researcher's ability to use thematic analysis effectively involves four stages of development. The first stage involves the researcher making sense of the identifiable themes and patterns of living/and or behavior in addition to recognizing the codable moments (Aronson, 1994). In the second stage, researchers train themselves to utilize the codes and themes reliably. Themes can be defined as units resulting from patterns such as "conversation topics, vocabulary, recurring activities, meanings, feelings, or folk sayings, and proverbs" (Taylor & Bogdan, 1989, p. 131). Identified themes occur by "bringing together components or fragments of ideas or experiences, which often are meaningless when viewed alone" (Leininger, 1985, p. 60). In the third stage, a researcher must develop a code to process and analyze the core of their observations. In the fourth and final stage, the researcher interprets the information and themes in the context of a theory or conceptual framework contributing to the expansion of knowledge (Boyatzis, 1998).

An effective thematic code captures the qualitative essence of the phenomenon and reflects the following five elements: A label, a definition of what the theme concerns, a description of how to know when the theme occurs, a description of any qualifications or exclusions to the identification of the theme, and examples, both positive and negative, to remove any confusion when looking for the theme (Boyatzis, 1998). Three different methods illustrate how to develop a thematic code: (a) theory driven, (b) prior data or prior research driven, and (c) inductive or data driven (Boyatzis, 1998). This qualitative study utilizes the data driven approach of thematic analysis.

In summary, a pure qualitative study originates from concepts, models, and theories in educational psychology, developmental psychology, cognitive psychology, and sociology. Researchers utilize this method when the goal is to understand how

participants make meaning of a situation or a phenomenon in which the researcher serves as a filter for the meaning, using inductive strategies with a descriptive outcome (Imel, et al., 2002). A qualitative study seeks to discover and understand processes, perspectives, and worldviews of the people involved (Locke, Myers, & Herr, 2001). The researcher collects data through interviews, observations, and document analysis (any one means or a combination of the three), and the results are usually presented as a combination of description and analysis. The thematic analysis concentrates on the identification of patterns or themes that transcend the data or that in some way define a process (Locke, Myers, & Herr, 2001).

Procedures

"The design is the logical sequence that connects the empirical data to a study's initial research questions and, ultimately, to its conclusions" (Yin, 1989 p. 28). In qualitative research, questions generally focus on process and understanding (Merriam, 1998). Excellent research questions come from a researcher's values, passions, and preoccupations (Russell & Kelly, 2002). This study is guided by the following research questions:

1) What are the perceptions of educational administrators who are being trained to lead technology rich Professional Learning Communities about their professional development experiences.
2) What are the perceptions of peer coaches as they assist administrators in establishing a Professional Learning Community with an emphasis on technology in their schools?

The researcher will interview a group of ten educational administrators to explore their experiences regarding professional development for leading technology rich professional learning communities and how they interpret and make meaning from their experiences. A qualitative research design utilizing thematic analysis is implemented to understand the meaning educational administrators construct about coaching and how they make sense of their experience of, and participation in, their leadership training. The primary data for this study will be collected by conducting semi-structured interviews, audio-taping the interviews and then transcribing them.

Population and Sample

As opposed to quantitative researchers, who rely on probability and random sampling, qualitative researchers are more interested in purposeful sampling which means that individuals are selected who can provide the richest information in regard to the purpose of the study. This method of sample selection is consistent with the goal of qualitative research – to gain an in-depth understanding of a few individuals rather than a cursory understanding of many individuals (Locke, Myers, & Herr, 2001). Given that it is an impossibility to study everything and everyone, the qualitative researcher thoughtfully considers the research questions guiding the study and then develops criteria to select participants who can provide the most information-rich data (Patton, 1990).

The population of this study consists of ten K-12 educational leaders participating in the Phase I leadership development training of the 2007-2009 Oklahoma Achievement Through Collaboration and Technology Support (OK-ACTS) program implemented by the K20 Center at the University of Oklahoma. The K20 Center is a statewide research and development center that invests in research focused on innovative teaching and

learning. Knowledge gained from these research activities is transferred to K12 schools through the K20 Center's professional development for all educators, sharing of best practices, and technology integration. These efforts provide educators with the knowledge and skills to initiate and support systemic, substantive changes impacting student learning. A partnership for leadership and technology integration, OK-ACTS provides professional development and laptop computers to 100 principals and superintendents a year to assist in the implementation of Professional Learning Communities that utilize technology to impact student achievement. The focus of this 75-hour professional development incorporates democratic leadership and school change based on the IDEALS and Ten Practices framework utilizing technology integration strategies (Cate & O'Hair, 2007; Williams, et al., 2008). Cluster coaches support the participants in their initial leadership training and throughout the year-long process. This collection of leaders representing separate schools and districts along with the cluster coaches will comprise the target group to promote further discussion on the research topic.

The OK-ACTS program bases selection of participants on their online applications where they express an interest in attending the two-day leadership seminar. To date, 1,500 educational leaders from all 77 counties across the state of Oklahoma representing rural, urban, and suburban schools have been trained. School principals (elementary, middle, high school), superintendents, technology coordinators, and federal program directors comprise the make-up of this leadership group. Given the wide range of applicant participation across the state, the socio-economic status of the participating

school or school district may vary significantly from Title I schools with a significant population of students on free and reduced lunch to non-Title schools.

The researcher selects and interviews a purposeful sample of five educational administrators who have participated in the Phase I leadership development program. Participants are selected based upon the critera that they have recently completed the Phase I training or are in the process of completing the training. The participants are from a mix of rural, urban, and suburban school districts. The majority of the participants are from schools that receive Title I funding, however one participant is from a non-Title I school. Participants from elementary and secondary sites are both represented. The researcher and Director of the Phase I Leadership program know these administrators to be forthcoming about their beliefs and leadership practices. The Director of the Phase I Leadership training also identifies four educational administrators for the researcher who she believes are effective cluster coaches for the program during 2008-2009. The Director gauges their effectiveness based on the coach's knowledge and use of technology in their cluster meetings and in their correspondence with participants. The researcher selects one cluster coach as a result of a participant's interview and the positive statements made about the coach. This was the only direct match of a participant with the coach that served for that cluster in the research study..

Data Collection

Data by themselves are nothing more than ordinary bits and pieces of information found in the environment (Merriam, 1998). The theoretical orientation, the problem, the purpose of the study, and the sample selected guide the researcher and aid in determining the data collection techniques as well as the specific information considered to be data in

a study (Merriam, 1998). Words will comprise the data of the study and consist of direct quotations from people about their experiences, opinions, feelings, and knowledge. The researcher will collect as many detailed specifics from the research setting and look for patterns of relationships among the specifics (Hatch, 2002). "You are not putting together a puzzle, whose picture you already know. You are constructing a picture that takes shape as you collect and examine the parts" (Bogdan & Biklen, 1992, p. 29).

The qualitative research design utilizing thematic analysis will aid the researcher in understanding a phenomenon from the participants' perspective. Qualitative data gathering techniques will include one of the major methods of collecting data for this type of study ─ interviews. The primary purpose of an interview is to obtain a special kind of information about what is "in and on someone else's mind" (Patton, 1990, p. 278; Merriam, 1998). Defined as a "purposeful conversation, usually between two people (but sometimes involving more) that is directed by one in order to get information," an interview allows the researcher to enter into another person's perspective (Bogdan & Biklen, 1982, p. 135; Patton, 1990). Qualitative interviews are special kinds of conversations or speech events utilized by researchers to explore informants' experiences and interpretations (Mishler, 1986; Spradley, 1979).

Qualitative researchers use interviews to unearth the meaning structures that participants use to organize their experiences and make sense of their worlds. These meaning structures are often obscured from direct observation and taken for granted by participants, and qualitative interview techniques offer tools for bringing these meanings to the forefront (Hatch, 2002). Interviews, when used in conjunction with observations, often provide ways to explore more deeply the participants' perspectives on actions

observed by the researcher. Interviews also provide avenues into events and experiences that may not be able to be readily observed.

The interview technique will be semi-structured where the largest part of the interview will be guided by a list of questions or issues to be explored allowing the researcher to react to the present situation, the emerging views of the respondents, and any additional ideas on the topic (Merriam, 1998). A less structured interview type presumes there are multiple realities and allows the respondents to provide distinctive understandings of the phenomenon being studied (Blankenship, 1991). After the researcher receives protocol approval through the IRB, the semi-structured interview format allows questions or issues to be covered without the priority of exact wording or order. Utilization of this method ensures that all areas of interest are investigated by the interviewer, yet leaves room for new ideas to emerge and to be explored (Merriam, 1988). This interview type allows the researcher to learn the participants' views and answer each research question while allowing better control over the types of information received since specific questions will be asked to elicit information. The researcher will audiotape and then transcribe interview responses in order to possess an accurate record of the conversation.

The key to attaining good data from interviews is to ask good questions (Merriam, 1998). The researcher will state questions in familiar language using words that are sensible to the interviewer and will reflect the respondent's world view (Merriam, 1998). On the average, the interviews were 30 – 40 minutes in length. Interview questions differed slightly among the participants and the coaches and are contained in Appendix B.

The researcher makes contact with the potential informants, gains informed consent, arranges interview times and locations, and selects/prepares recording equipment. It is imperative that the informants possess a clear picture of the nature of the investigation and the purpose of the research. The researcher takes brief notes during the interview in the case of an audiotape malfunction since an essential process in qualitative research is recording data (Lofland & Lofland, 1995). The entire process involves recording information, administering data collection, and being sensitive to any ethical issues that may influence data quality (Creswell, 2005).

Although time-consuming because the researcher only talks to one individual at a time, one-on-one interviews are ideal for interviewing participants who are forthcoming, are articulate, and who can share ideas easily (Creswell, 2005). Defined as a "conversation with a purpose," person-to-person interviews will obtain a special kind of information (Dexter, 1970). The researcher probes and finds out what is in and on the participants' minds (Patton, 1990). Because of the relationship in place between the OK-ACTS participants and the researcher who once served as a cluster coach, the one-on-one interviews take place with members of other cluster groups providing an opportunity for participants to provide detailed personal information with a person who they know as a colleague, but not as a coach.

Data Analysis

The analysis consists of developing a universal sense of the data, and then coding description and themes about the central phenomenon (Creswell, 2005). Although, the preliminary analysis consists of subdividing the data, the ultimate goal is to generate a

larger consolidated picture (Tesch, 1990; Creswell, 2005). The data analysis process adheres to the following guidelines (Creswell, 2005):

- Collecting information from the qualitative interviews will be inductive in form moving from the particular (transcribed data) to the general (codes and themes).
- Analyzing and collecting data will occur simultaneously.
- Rotating between data collection and analysis returning for more information if necessary will make this a recursive process for the researcher.
- Reading and analysis of data will occur continually a multitude of times.
- Examining the data will follow the pragmatic process of thematic analysis.
- Combining and cataloguing related patterns will merge information into sub-themes to obtain a more comprehensive view.
- Interpreting descriptions that fit the situation or themes that capture the major categories of information will allow the researcher to bring personal assessment and perspective to the research study.

The researcher looks for information in the qualitative results that will help to illuminate and explain in more depth the experiences of the respondents. Any additional data which lends support to the qualitative findings will also be analyzed. After transcribing and typing the data into a computer file, the researcher explores codes and themes of the qualitative interview data. The results are used to answer the research questions for the final interpretative phase of the study. Managing the data consists of identifying notations for each document so that specific pieces of data can be retrieved at a later time. The researcher's thoughts, musings, speculations, and intuitions are noted and utilized to build on existing data which emerge from the interviews, (Merriam, 1998).

Researcher Reflexivity

In a qualitative project, the researcher is the primary instrument of data collection and analysis, therefore reflexivity is considered essential (Glesne, 1999; Merriam, 1998; Russell & Kelly, 2002; Stake, 1995). Through reflection researchers become aware of what allows them to see, as well as what may inhibit their seeing (Russell & Kelly, 2002). Given the researcher's own involvement in the OK-ACTs program, the first reflective exercise was to examine the reasons for wanting to research this topic. As a building level principal, this researcher was convinced of the value of the Phase I Leadership training in developing a professional learning community supported by technology at a school site. Wondering if a positive response to the training was held by other participants from around the state and if so what were their actual thoughts and reactions, the researcher felt a better perspective could be gained from interviews with the participants in the training as well as some of the cluster coaches. The literature review reflected a gap between the role of technology as a communication and learning tool in a PLC. Personal reflection by the researcher allowed for a clarification of the research purpose (a desire to gain insight into training that develops school leaders that implement a PLC supported by technology) and why this study was worth pursuing (implications for leadership development programs).

The National Commission on Teaching and America's Future (2003) states that school reform cannot succeed without creating conditions in which there is quality teaching which requires strong professional learning communities. "Collegial interchange, not isolation, must become the norm for teachers. Communities of learning can no longer be considered utopian; they must become the building blocks that establish

a new foundation for America's schools" (National Commission on Teaching and America's Future, 2003, p.17). Yet what role did technology play in this process and how do we give educators the skills that they need to be successful in preparing students for 21st century learning? Here was the purpose for my research and what I hoped to add to the literature on professional learning communities..

Trustworthiness

Producing valid and reliable knowledge in an ethical manner is a concern for all research (Merriam, 1998). Ensuring validity and reliability in qualitative research includes conducting the investigation in an ethical manner that allows research results to be trustworthy (Merriam, 1998). The trustworthiness of this research study is approached from the perspective of paying careful attention to the study's conceptualization, the way in which the data is collected, analyzed, and interpreted, and the way in which the findings are presented. To ensure trustworthiness, the researcher allows participants to check their interview transcripts for accuracy. The researcher also shares data and tentative interpretations with the participants and asks them if the results are credible. Two colleagues also serve as peer reviewers commenting on the findings as they emerge,. The researcher and peer reviewers hold multiple discussion forums that analyzes the themes and codes from the interviews. The researcher's assumptions, orientation, and worldview are also clearly delineated at the beginning of the study (Merriam, 1998).

Credibility

Reliability is the extent to which the results can be replicated (Merriam, 1998). However, the term reliability in the traditional sense appears to be a misnomer when applied to qualitative research study (Lincoln & Guba, 1985). A more feasible approach

to reliability in relation to qualitative research is to think about the dependability or consistency of the results obtained from the data in a way that suggests given the data collected, do the results make sense (Lincoln & Guba, 1985). The question then is not whether the findings will be found again, but whether the results are consistent with the data collected (Lincoln & Guba, 1985). Credibility involves establishing that the results of qualitative research are credible or believable from the perspective of the participant in the research. Credibility and transferability are two traditions for ensuring the quality and trustworthiness in qualitative research (Lincoln & Guba, 1985). The researcher is able to explain the assumptions and theory prompting the study, the researcher's position in the group being studied, the basis for selecting the participants, and the social context of the data collection (LeCompte, et al., 1993).

Credibility on the part of the researcher ensures that the study is an accurate reflection of the experiences of those who are participating. The extended time taken to conduct the research interviews, the personal transcription of the interviews by the researcher, the opportunity for participant feedback on interview transcriptions, and the peer review discussions all strengthen the ability of the researcher to portray these experiences accurately. From this perspective, the purpose of qualitative research is to describe or understand from the participant's eyes and the participants are the only ones who can legitimately judge the credibility of the results.

Transferability

Transferability refers to the degree to which the results of this qualitative research can be generalized or transferred to other contexts. From a qualitative perspective, transferability is principally the responsibility of the one doing the generalizing. The

qualitative researcher can augment transferability by explicitly describing the research context and the assumptions that are pivotal to the research. A person wishing to transfer the results to a different context is responsible for making the judgment of how sensible the transfer might be. In this instance, a purposeful sample of administrators from a mix of urban and rural settings is used for the study. While the researcher believes that there is a transferability of the results to other administrators, additional research is needed to see if the findings in this study are replicable

Role of the Researcher

Although the ultimate goal of the researcher is to be an unbiased participant, the reality is that each of us brings our own predetermined thoughts and values to any given situation. As a school leader, a member of a PhD cohort emphasizing technology integration, and coach for the OK-ACTS program, the researcher puts aside biases to remain neutral and true to the design of the study. These predetermined experiences by the researcher ultimately serve to provide a richer dialogue during the interview process and knowledge of the appropriate probing questions to ask the participants. During any given time, the role of the researcher may change depending on the task at hand.

In person, semi-structured interviews dictate that the researcher establish a rapport with the person being interviewed in a manner that allows for a free flow of information on the research topic. The researcher remains neutral and unbiased as questions are being asked and answered by the participants. The researcher withholds judgments on comments made to help the interview flow smoothly and to avoid possible reactive responses. Ultimately the research challenge is to collect, analyze, and communicate data in a valid, unbiased manner.

The challenge of producing a study that is conducted and disseminated in an ethical manner lies with the researcher. The researcher is sensitive to the needs of the participants and ensures that the study's findings will not be used to the detriment of those involved (Merriam, 1998). In the best of situations, a researcher is cognizant of the issues surrounding the research process and examines his/her own theoretical beliefs in a good faith effort to conduct an ethical study.

Evaluating the Research Design

Effective qualitative studies possess a number of characteristics in common (Merriam, 1998). Assumptions and identifying characteristics of qualitative research frame the study. Each study begins with a single focus and researchers employ rigorous data collection procedures including detailed methods related to analysis and writing. A detailed explanation of methods is essential in qualitative studies because, unlike quantitative studies, there is no prescribed way of conducting the research (Locke, Myers, & Herr, 2001)

Researchers conduct a comprehensive data analysis and the subsequent writing of results is thorough and persuasive. The ultimate goal of the researcher is to create a "verisimilitude" a sense of "being there" for the reader (Richardson, 1994, p. 521). The qualitative researcher engages the reader in the presentation of the study and leaves the reader with the conviction that what is being reported is true. To engage the reader, the researcher's work must be "exploring, playful, metaphorical, insightful, and creative "(Patton, 1990, p. 433). To be convincing, the researcher must demonstrate an approach that is systematic, analytical, rigorous, disciplined, and critical in perspective (Patton,

1990). The qualitative design of this study coupled with thematic analysis will allow the researcher to discover and understand the experiences and perceptions of the participants.

Conclusion

This research study explores from the participants' perspectives their professional development experiences as educational administrators training to lead technology rich professional learning communities as well as the perspectives of the cluster coaches. The purpose of this qualitative study is to gain a greater understanding of the professional development that gives administrators the viable skills that they need to lead professional learning communities into the 21st century. Qualitative data consisting of semi-structured individual interviews are used to interpret findings and examine through the participants' own words their growth through the OK-ACTS Phase I Leadership process and the impact of the cluster coach on this process.

A qualitative study utilizing the thematic analysis process is chosen for this investigation since this design contains the essential characteristics of research (goal of eliciting understanding and meaning, researcher as primary data collector and analysis instrument, use of fieldwork, indicative orientation to analysis, richly descriptive findings), but does not focus on culture, build grounded theory, or intensely study a single unit or bounded system. The purpose of the study is two-fold: first to discover and understand the perceptions of educational leaders as they receive professional development to gain skills as technology leaders of professional learning communities and secondly, to discover and understand the perceptions of educational leaders who serve as their coaches. The researcher feels that an interpretive qualitative study supported by thematic analysis is the most viable for this research.

CHAPTER FOUR

Research Results and Analysis

The purpose of this study is to describe the coaching experiences of educational administrators, gaining greater understanding of how they develop the necessary skills to implement, lead, and support technology rich professional learning communities. To achieve this purpose, the study investigated the following qualitative research questions:

1) What are the perceptions of educational administrators who are being trained to lead technology rich professional learning communities about their professional development experiences?
2) What are the perceptions of peer coaches as they assist administrators in establishing a professional learning community with an emphasis on technology in their schools?

Five of the research participants were administrators who attended the Phase I Leadership Development training provided by the Center for Educational and Community Renewal located at the University of Oklahoma during the years 2007-2009. In addition, five of the research participants were administrators who served as cluster coaches during the years 2007-2009. The researcher examined what these administrators perceive as important factors in developing skills to lead technology rich professional learning communities from the perspectives of the participants and the cluster coaches.

The first section of the chapter provides a table with a brief description of each participant and a summary analysis of the responses from the five administrators involved in the initial Phase I Leadership development training. The second section of the chapter includes a table with a brief description of the coaches and represents a summary analysis

of the responses from the five administrators who serve as cluster coaches to administrators involved in the Phase I training. The third section of the chapter represents the three emerging themes, the overlap in responses of both of these individual groups, and their multiple perspectives. Appendix A contains a more detailed personal vignette of the study participants and the cluster coaches.

Table 1

Description of Participants

Phase I Participant	Description	Level	Size of District	Location of District
A	Female Principal	Elementary	2,476 Students	Suburban Area
B	Female Principal	Elementary	1,635 Students	Suburban Area
C	Female Assistant Principal	Middle School	13,718 Students	Highly Populated City
D	Female Principal	Elementary	13, 718 Students	Highly Populated City
E	Male Principal	Elementary	2,783 Students	Medium Sized City

Summary of the Participants' Phase I Leadership Training Experiences

Elementary school principal (A). Encouraged to participate in the leadership development program by her school superintendent, this principal realized the limitations

of funding in her district and the importance of joining with the K20 Team "to get us (her school) the technology that our students need" (Interview, 2009). She noted "a lot of school districts already have all the technology and we are so far behind so that was really eye opening for me" (Interview, 2009). As a participant she described being able to work with other principals not only in her district but in other districts as well. In describing this professional development training to another educator she used the following terms: organized, hands on, modeling, presenting new material, and being supplied with multiple resources. In describing the role of the cluster coach this participant stated the following:

> He is there to coach us on with our grant and to help us meet the K20 requirements. He is very encouraging and if we have any questions he is there to answer them. He helps us get in touch with people that we need to contact or the resources that we need. Just keeping us on meeting our time lines helped a lot too (Interview, 2009).

When commenting on the impact of the cluster coach, she stated "he kept us going" (Interview, 2009). Emailing was an effective form of communication between the coach and the cluster group. The strength of the cluster group was the networking, brainstorming, and the sharing of ideas. The weaknesses in this participant's mind were two-fold. First, "the time away from our schools and that is a weakness because it seems like that is when things happen" (Interview, 2009). Another weakness is the distance between the participant's school district to the K20 Center. One of the major ideas gained from the cluster group was "it just kind of opened my eyes to really survey and look around and see what would be best for our students and teachers and what would

help them the most" (Interview, 2009). She related this professional development to a professional learning community because she would take the meeting information back to her staff and get their input. Through surveys she tried to find out what the staff felt was most important for the school and how they could support student achievement and student learning which she feels forms the basis for a professional learning community. Technology was consistently utilized as a quick communication tool for the group from emails to sharing power point slides.

As a result of this leadership experience, this principal stated that working on the grant as a team with a common goal is building unity and ownership among her teachers. A suggestion for future cluster groups would be to provide an opportunity for participants to look at a completed grant during one of the cluster meeting sessions. Overall this participant stated " it is a fantastic program, a great way for us to get technology for our schools so I'm real excited about that and I appreciate the opportunity to be involved" (Interview, 2009).

Elementary school principal (B). Promoting professional growth and developing support systems to help in the pursuit of technology goals reflects the primary reasons this elementary principal participated in the leadership development program. She described her experiences as beneficial "first and foremost because of the relationships that we were able to develop with other administrators around the state" (Interview 2009). "It kind of helped to propel our knowledge a little bit to have us more up to date on what is out there on technology and what other schools are doing" (Interview, 2009). She described herself as "just working to learn, to grow, and to be informed" (Interview, 2009).

In describing this professional development experience to another educator she stated, "it is an opportunity to build some relationships with other educators in an area that I also focused on professional growth" (Interview, 2009). She further states, "That instructional leaders kind of stay on top of what is out there in terms of strengthening instruction and certainly that is a relative piece of the training" (Interview, 2009). This participant did not feel that she had enough information to be completely clear on the role of the cluster coach since she was in between the two days of training. She anticipated the following:

> The coach is maybe going to be the person who works to keep us involved and kind of focused on the things that are supposed to be going on and happening and that it will be that person in that role who almost works a little bit you know like an accountability officer (Interview, 2009).

The participant described the strength of the cluster group is that "everyone that I've encountered in the cluster group you know are motivated to grow. You know their participation is testimony to the fact that they are life-long learners" (Interview, 2009). The participant stated that the weakness of the program revolves around how busy they all are in their real life and trying to remember to log into the Moodle server or blog to keep informed on what is going on in the cluster group. The primary idea that this principal gained from the group is how other school districts are using technology to involve their staffs in PLCs and how important it is to be educated and to learn more about these possibilities and what other schools are doing that they find successful.

Due to the size of this principal's school district, she felt that opportunities to work and "be in the room" with other state-wide leaders are extremely limited (Interview,

2009). Training in Phase I simulated a PLC by giving participants the opportunity to talk about what's working and what one needs to know and to network with other people who are working toward the same goals in other schools around the state of Oklahoma. She described the impact of technology as exciting because "we see there is a forum there that will let us communicate regularly and easily" (Interview, 2009). By blogging and being set up in Moodle, she can participate and see what other people want to know in relation to the Phase I process.

Although premature to identify something that could already be considered a change for this administrator, she did state that she views more things as a process and she has begun to gather some information that will help her in growing in her understanding of PLCs and how other districts are making those work on school sites. Also she stated the following:

> Just trying to gain a better understanding of my staff's current knowledge base in regards to technology and what kinds of things would be most appropriate to move towards first, as we really work to integrate technology and our instructional plan (Interview, 2009).

This participant had no concrete suggestions for future cluster groups at this point in her training. She did add that she is excited that she is able to participate in the training and learn more about what "the vision is for unfolding in my district and how we will be able to really utilize the resources and the connections we've made to help us grow" (Interview, 2009).

Middle school assistant principal (C). Having her head principal go through the training and encouraging her to "follow suit" as well as participating in the OK-ACTS

program as a grant receiving school and forming a connection to the K20 Center, ultimately led this middle school principal to the Phase I leadership training (Interview, 2009). She described her experience as an introduction to a lot of new technology as well as an opportunity to meet with "techs" who demonstrated the use of technology in an authentic way (Interview, 2009). She stated that the professional development is "worth your time" and "advanced when it comes to your knowledge about technology" (Interview, 2009). She also felt the training was a "big proponent of authenticity, of not just using technology for technologies sake, but actually implementing it in an authentic way that is relevant to real life" (Interview, 2009).

This administrator described the role of the cluster coach from a different perspective than any of the other participants because the head principal at her school also served as her cluster coach. An established relationship already existed between the two and the participant stated "he was really accessible he was my principal" (Interview, 2009). She goes on to state that the coach impacts the group by serving as a connection and by giving the group a safety net. She maintained, "He was definitely the funnel for questions. He was the one that they went to and he would provide us with the answers" (Interview, 2009).

The strength of the cluster is that it breaks the larger group down into a smaller unit of individuals that "you get to know on a more intimate basis and can discuss things with" (Interview, 2009). The point is made that there is a contact person at all times. Ideas gained from the cluster group centered around "everyday things" for this participant (Interview, 2009). She further stated:

Just some of the common place technology not the big things like e-instruction,

> but texting or Facebook it just opened my eyes that simple or everyday things could be used in an educational sense and really got me thinking about that is how our kids communicate with one another and so we need to tap into that (Interview, 2009).

When relating this professional development to a professional learning community, the participant made the following insightful statements:

> Okay, it takes those individuals, it brings them together on multiple occasions, it gives, that was one of the things that I really took away from it, the opportunity to meet other professionals in a similar situation as myself and to get to have those conversations with them about collaboration, about authenticity, about how to incorporate technology; also to hear what they are doing in their schools and how they planned on using the funding that they received through this grant and so it really is the heart of a learning community. I think it's the essence of when you say professional learning community. It meets that definition (Interview, 2009).

Technology is utilized as a forum of communication and although the participant cannot remember the exact name of the site what she describes is a Moodle site set up by the cluster coach. This site allows questions and topics to be posted and according to the participant:

> Everyone can converse about that and so whenever I respond, I'm not just responding to whoever put that question out here but also responding to all the other individuals so it allowed us to have that communication. We came from all different parts of the state and so it was a way for us to communicate

effectively without having to find a location or that sort of thing and that is where a lot of our questions were answered (Interview, 2009).

As a result of this leadership experience, the administrator feels that now their professional development centers on the practice of authenticity. Core subject areas are no longer superficial, but being used in a more authentic way. Her only suggestion for future cluster groups is to get the coach more involved in the initial two days of professional development training. Being more familiar with the coach during the first two days of training will help to facilitate discussion throughout the remainder of the year. A closing comment from this administrator centered around the fact that for this particular participant the information "was a little bit of a repeat" since she had previously participated in OK-ACTS training as a member of a grant recipient school (Interview, 2009).

Elementary school principal (D). Led to the Phase I leadership training by its reputation, this administrator said she knew that "it provided the resources and the opportunity for the grant and the opportunity to develop leadership skills" (Interview, 2009). Her experience in the cluster groups differed from that of the other participants in that she was so busy in the year of her leadership training that she attended alternate cluster meetings and never met again with her original cluster group. She stated "so both of those times I was either by myself conversing with the cluster group leader (conference call) or I was with a group that I did not know at all" (Interview, 2009).

Asked to describe this professional development to another educator she stated, "I like the fact that it helped develop our capacity as leaders in the role of the principal and that leadership was the focus of the training rather than simply the technology or how to

use the technology" (Interview, 2009). This participant perceived the cluster coach as a facilitator of discussions and extremely helpful in talking about and writing the grant and action statements. She described the coach's contribution as "probably the most outstanding thing that I got from her was her leadership in the process of writing the grant" (Interview, 2009). The participant further stated that the coach was very knowledgeable about the process, facilitating group instruction and giving her the technical information that she needed.

One of the strengths of this cluster was the diversity of the group. In the participant's own words, "It helped me to hear about some of the technology they had begun implementing and the way they were using it and the way they structured their decision-making through their technology committee and even the grant writing committees" (Interview, 2009). One of the main ideas that this participant gained from the cluster group was "structures for communication" and a broadened viewpoint about who to include in the decision-making process (Interview, 2009). This administrator realized that she had more informal stakeholders than she would have otherwise included in the decision-making process.

Relating this professional development to a professional learning community, the participant felt strongly about the following statement:

> It relates very closely to it because a common language is facilitated. The goal, the mission, the purpose of the technology and the committee in your building is really emphasizing using the community of learners and to look at and to get feedback from each other on what is effective… what's working (Interview, 2009).

The participant believes that the biggest change that has been made at the school level is that "now I have a group of decision-makers and we have a committee so we have the structure of formal communication" (Interview, 2009). As a leader, she knows that it is her responsibility to make things happen and say "this committee is important, our meetings are important, our decision-making is important" (Interview, 2009). The grant writing itself and the process that her staff went through to write the grant enabled teachers to stretch their vision and to come up with a plan of what they wanted in their classrooms. This administrator sees the grant writing as a helpful process to further their technology implementation and to develop leaders on her staff whether they get the grant or not she feels that the process is beneficial to her school.

In response to suggestions for future cluster groups, the administrator sums up her feelings in the following way: "I just found everyone to be themselves, leaders in their schools. I found them to be innovative in their thinking and for there to be a real collaborative feeling of helping each other" (Interview, 2009). She also stated that she wishes she could go through the cluster group again because she feels that she would get more out of it the second time because the technology has all changed. She ends her remarks by stating that everyone was forward thinking and that the leadership development was applicable to what she does on a daily basis. What she appreciated the most about the process was having the time and the flexibility to write the grant when it was right for her school.

Elementary school principal (E). This Generation X principal who grew up with video games believes that his interest and strength in technology led him to this leadership development program. He also stated that due to his high level knowledge/use

of technology going into the program that his function in the cluster group was more of a leader than a learner. He elaborated on this in the following statements:

> It was great in the sense that I think that we were able to tell people kind of what is out there but for myself it was bad in the fact that I already knew what was out there. It was nice that I could teach others, but as far as what I got out of it, it was hard because everyone was at the initial let's get a smart board, let's get a mobile lab and those are things we already have in every classroom. So I was more hey what is going to be the next big thing ten years from now (Interview, 2009).

In describing this professional development to another educator he stated "it's all about teacher collaboration and all the work groups" (Interview, 2009). He went on to say that so many of the smaller school districts in our state aren't aware of what technology is out there so the meetings provide valuable information on "what a smart board can do in your classroom, what teacher collaboration can do for you, and all the book studies" (Interview, 2009). As a result of his administrative (EACS) program at the university level which he stated is "geared almost exactly like the K20" the information that he received during the training "was just a reinforcement" of the program that he went through at OU (Interview, 2009).

As a result of this participant's high knowledge base in technology, he was asked to give a presentation instead of attending his cluster meeting. It is important to note that his thoughts on the role of the cluster coach are based on the first initial training as opposed to the two subsequent cluster meetings which he missed. In describing the cluster coach's role he stated the following:

> Hey I know it's a lot of work but basically as an elementary principal you

> are going to wear many hats whether it's encouragement, whether it's guidance, whether it's researching for them what they need. I feel like the coach isn't one specific job it can entail motivation, all these various other aspects (Interview, 2009).

In regards to the impact of the cluster coach on the group, he stated that she "sets the pace" (Interview, 2009). He goes on to say that she did a great job of keeping everyone on task, but also being very positive in the aspect of everyone being on different levels. She accepted the fact that there was frustration, but was very quick to step in and say "you are more advanced so why don't you try this" (Interview, 2009). In essence, he believes that she did a great job of individually assessing each group, keeping the participants on pace, and keeping them focused on the grant process. He affirmed, "I mean she put into perspective of just that light at the end of the tunnel cause it can be overwhelming with everything else you've got going on" (Interview, 2009). When describing the cluster group he stated the following:

> I think that the strength of the cluster group is obviously professional development and the computer and the knowledge base that you get from the group, but then the weakness is you've got so many people coming in at different areas it's just like when you are teaching, how do you reach those gifted and talented kids, how do you reach those kids who are I mean your ESL or kids who are so far off from computers, but want to be a part you keep everybody involved looking for the next big thing (Interview, 2009).

He gained ideas from the cluster group that revolved around collaboration and looking for something new such as Moodle and online coursework.

In relating this professional development to a professional learning community, he said that everyone is involved and has input. Data is driving decisions in relation to one's interests, strengths, and weaknesses. The training does a great job of facilitating the step by step process of how an administrator accomplishes buy in with teachers and gets everyone participating in decision-making. In his opinion, the utilization of technology saves a person time in organization whether that process entails data sheets, Excel, the internet, or PowerPoint. In addition, technology also offers the user a great product for presentations "instead of just getting up there and speaking" (Interview, 2009).

The training impacts school change by keeping technology on the forefront. In the participant's own words "technology is a huge driving force" (Interview, 2009). He goes on to state:

> It sets the tone to say kids are learning through technology now and so if we don't stay on board then basically we are going to be playing catch-up so we are rethinking everything we do, whether it is how we do announcements on the intercom now we have built a studio and we do everything over the Smart board, so basically it's transitioned our whole style of thinking from old school to worksheet, textbook, to now basically active participation integrated with technology (Interview, 2009).

Smaller groups of individuals for coaches to work with in addition to more coaches are the primary suggestions of this participant. Overall his rating of the training is great stating, "The K20 is up to date on pretty much everything so they are a good sounding board as far as if you need to know what's out there or any professional

development on anything" (Interview, 2009). He concluded by saying "I see the effects the benefits have had" (Interview, 2009).

Table 2.

Description of Cluster Coaches

Cluster Coach	Description	Level	Size of District	Location of District
F	Male Principal	Middle School	1,522 Students	Medium Sized City
G	Male Principal	High School	469 Students	Small City/ Rural Area
H	Male Principal	Middle School	13, 718 Students	Highly Populated City
I	Female Executive Director of Special Services	Central Office	18,790 Students	Large City
J	Male Superintendent	Central Office	235 Students	Rural Community

Summary of the Cluster Coaches' Experiences

Middle school principal (F). Led to the role of the cluster coach because he enjoys being around other principals, this educator went on to say that "it is a great networking and idea harvest for me" (Interview, 2009). He described his experiences in the cluster group and his role as a coach as an introduction to technology in education. The training is geared for "individual development and it is set up for your experience

level" with no one feeling out of place or bored (Interview, 2009). He goes on to say, "It is a well devised plan in the way that they have it set up" (Interview, 2009).

In describing this professional development to another educator, he emphasized that the cluster group is where he learned about how much support one can get from the K20 Center, the cluster coach, and the other cohorts of the group. He stated, "We shared and we're still friends today" (Interview, 2009). He believed this to be a great experience due to the camaraderie among the group and his goal was to give his cluster group the same experiences that he was given when he was a participant in the Phase I leadership development training. His impact as a coach was to set the tone for the whole group. His main role as a coach was to provide support and to help his group all the way through the grant phase. He saw the strength of the group as "being able to work with the other people in your group and to work with their strengths (some were very good at the grant writing process and action plans) and maybe their weaknesses" (Interview, 2009). He went on to say:

> The only weakness against being in the cluster group is when you went back to your school, you are kind of all alone and there is no one at your school to share that with. It would be nice if there were partners from your school there to take that back. It's a whole lot of knowledge to take back by yourself, it was for me (Interview, 2009).

In relation to a professional learning community, the professional development emphasized the importance of all the stakeholders and "how much they have to put into this for our success…the importance to fit their participation and their acceptance and their cooperation in order to make this successful" (Interview, 2009). This learning

coach went on to state:

> I believe the Phase I professional development taught me how to do that and introduce this to my teachers in a way that they were willing to jump on board and be very supportive. A professional learning community exists where teachers work together with the technology and with the lesson plans, and with all the different things that we have learned over the years from the K20 and they share among each other. We shared it with our teachers to build what we have. In the beginning half of the teachers were scared of the technology and half of the teachers embraced it and now as we went on they all embraced it and they all were more comfortable with it (Interview, 2009).

According to this cluster coach, he started with the same uneasiness about the utilization of technology but now stated "technology makes me feel a lot more at ease" (Interview, 2009). His constant use of technology with his cluster group and his explanations of the multiple uses of technology at his school left them with the feeling that "if this guy can do it then anybody can" (Interview, 2009). For the cluster group, networking through technology transpired through email and the Google website. Google mail allowed the sharing of documents by participants from action plans to grant references as well as the capability to add and edit. As a result of this leadership experience, the cluster coach stated the following:

> I am much less of a dictator. The biggest thing to change me is that I understand about the professional learning community and how it's important and we are one functioning unit instead of me handing down what to do. We all have

ownership in what is going on in our school and I feel like our teachers feel that way (Interview, 2009).

In the network of the cluster group, it was extremely helpful for this coach to hear what was going on at other schools especially in relation to state mandates. His suggestion for future cluster coaches is to "prepare ahead of time and think of all the questions that you had when you started and to know those answers" (Interview, 2009). He wished that the cluster groups could bring two people from each school so more sharing can be done back at school as a team and stated the following:

> It would be nice because when you go back to school and you're telling everybody and you're all excited about this, you're the only one excited about it. That's one thing I've really noticed yes I believe we should have the principals there because it does come down from the top, but I think you need to have a teacher there with them also so they're excited about it because their excitement spreads better than my excitement (Interview, 2009).

High school principal (G). Without hesitation this high school principal agreed to be a cluster coach citing her interest in the vision of the K20 Center and the IDEALS framework. Collaborating, sharing school success stories, progressing from minimal technology use to advance technology use, and seeing how the IDEALS are starting to become interwoven within the schools of the participants that she is working with defined her experiences as a cluster coach. In describing this professional development to another educator she stated the following:

> They (K20 Center) are going to put you through the IDEALS framework to really kind of hone in on authenticity and how you incorporate technology, how to use

that to look at your testing data and to be able to identify areas of weaknesses and strengths to focus your school, the K20 as Center is very supportive (Interview, 2009).

As a coach, she described her impact on the group as being "their first line of communication" and "giving them the direction to accomplish" what needs to be done (Interview, 2009). She summed up the strength of the cluster group in one word "support" (Interview, 2009). As a coach she described herself as the person who is sending out mass emails hoping to make a connection because of the collaborative processes that took place when they were together as a group and the communication benefit in being part of a cluster group. In thinking of the disadvantages, she replied that she doesn't see one since everyone is supporting each other when it comes to education. She goes on to state that if you tried to accomplish all of this alone the frustration level could possibly be too high and a person would just say I don't have time for this.

The coach defined the cluster as a professional learning community where leaders are trying to incorporate change and members in the group communicate with each other through technology utilizing email, google docs, Moodle, and video conferencing. Possessing the technological ability to prepare materials, to send out information, and to conduct meetings is extremely important to this cluster coach. The changes that this coach made at her school as a result of this leadership/coaching experience she described as "massive" (Interview, 2009). All of the professional development at her site pertains to the ten practices of high performing schools. In her own words, "It is definitely an everyday thing for me so it is definitely important" (Interview, 2009).

The ideas gained from the cluster group through collaborative processes, inquiry,

and discourse, include the gaining of knowledge of internet websites, ways to display information, lesson activities, and grant writing opportunities. Suggestions by this coach for future cluster groups emphasized continual communication, monthly how are you doing checks, and asking participants about their needs. In summary this principal stated, "As a cluster coach it is good to keep that communication that line open just to support the other members" (Interview, 2009).

Middle school principal (H). Stating "it is always good to do something for a friend," this middle school principal accepted the role of the cluster coach since very close friends were working on the project (Interview, 2009). He viewed the role of a cluster coach as an opportunity to work with many educators gaining insight into what is going on in other districts, listening to their plans, and developing a mutual relationship of help as well as support. The K20 staff implements the majority of the training which he described as a methodical, well thought out process. He explained his role as a coach in the following way: meeting with them, being a sounding board for them, and serving as a liaison between the cluster group participants and the K20 Center.

In describing this professional development to another educator, he emphasized that the processes are well grounded in the IDEALS framework which is founded in research. "It's very much a collaborative effort," he states, "and it's very much an inquiry based effort and both of those are very important" (Interview, 2009). He goes on to say that "getting leaders trained and having leaders become reflective on how to involve individuals in a collaborative way is important." He believes that the professional development that he went through at the K20 Center is this kind of training

where “data supports decisions so it is inquiry based and utilizing information to make decisions is reflective leadership” (Interview, 2009).

Examining the impact of the cluster coach on the cluster group he described as being dependent on the individual. “I’m not sure that I had a great impact on the group as a whole, he says, “I was there if they needed someone” (Interview, 2009). He believed the strength of the cluster group revolved around the diversity of the people, the diversity of the experiences, the diversity of the type of schools, and the diversity of the resources contained in each school district. All of the individuals who are a part of the cluster group possess the opportunity to share their experiences in each of these areas. The primary weakness was geography and the difficulty in accommodating all of the cluster participants “in a group at one time” (Interview, 2009). The cluster coach viewed the solution to this problem to be the utilization of various forms of technology– distance learning, email, talk back TV, or a conference call to bridge the geographic and information divide among the participants.

In relation to a professional learning community this professional development supports group processes and “getting people to think and to be reflective about practices,” he stated (Interview, 2009). Utilizing the IDEALS framework, cluster coaches establish a firm pedagogy for the administrative participants in understanding collaborative effort and discerning what is important to have input from teachers versus making decisions all on their own. He stated, “the hard thing about any collaborative effort is understanding what it is that is important to collaborate about and where you have input and where you have decision-making” (Interview, 2009). He believes the mantra for this program is more about the leadership and not about the technology and

goes on to state:

> It is about how you get people to collaborate, how do you get people to have a common vision and set of goals, how do you move from that direction, how do you get people to develop a sense of responsibility and a willingness to take on that responsibility and then how do you get them to be reflective after it is all over with after you have gone through a process and how do you reflect back on it? (Interview, 2009).

The utilization and the impact of technology on the group and his coaching methods were minimal according to this administrator. Although at one juncture he utilized a conference call among his cluster participants, he found the easiest way to communicate with people quickly and efficiently was email. He described himself as a liaison and if people had questions then they would call or email him or call the K20 Center directly. He believes that he had minimal impact as a coach and that he wasn't a very effective coach for his group.

In relation to making changes at his school, this coach believes that a lot of what the K20 Center advocates he aspires to do at his school and has from the very beginning of his tenure as an administrator. This philosophy defines his teaching background which he described as "constructivist and inquiry based" where he expects people to actively construct their own knowledge and he believes that the leadership style that he promotes in his school revolves around these types of conversations with his staff. This coach thinks that that the most important ideas gained from the cluster group revolve around creativity, talking, and developing ideas. He acknowledged that he had the unique position of watching the group evolve and "how it became something more than it was to

begin with" (Interview, 2009).

This administrator had the following suggestions for future cluster groups and coaches: "get a clear idea of what the K20 Center is asking you to do and get a clear idea of what you want to do in that umbrella, if they match then you become a coach" (Interview, 2009). As a cluster coach he emphasized understanding the broader picture that the K20 Center is trying to accomplish. In addition he stated the following:

> The individuals within the cluster have a little bit more flexibility maybe in that they're gathering data, they're there learning and reflecting and then they can take it and apply it as they want to in their own setting. So they can go in and garner some skills, garner some knowledge, and have the opportunity to do that in a group setting. Then they can go back to their schools and decide how they want to use those skills and that knowledge in their own setting as opposed to what a cluster coach can do" (Interview, 2009).

This cluster coach's primary suggestion for himself in a future coaching situation was "to make a little more contact and maybe stay in more contact." In other words, he wanted to be more aggressive in making contact with people so that he would know more about what is going on in each of the participant's schools.

Middle school assistant principal (I). Asked by friends at the K20 Center to become a coach, this administrator believed that she could probably do this because she had already been through the OK-ACTS grant writing process. She described her role as a coach as twofold, first to organize the meetings which entailed giving out information and teaching the participants about the K20 Center expectations in regards to the grant writing process. Secondly, she viewed herself as a facilitator of discussion which was

one of the key components of the networking process.

In describing this professional development to another educator, she emphasized that even if a school administrator does not end up writing a grant the training is "really beneficial to them as far as all the research that shows how technology impacts student achievement" (Interview, 2009). The cluster group provided the opportunity for participants to walk through the components of the grant, think about the impact, learn to use different kinds of databases, and listen to participants from other schools talk about what they are doing in their buildings. She stated that "a key component to any staff development piece is that you can go listen to what other people are doing and have contacts after the meeting is over which is probably the most beneficial piece to that" (Interview, 2009). She believed that her impact as a cluster coach is reflected in the large number of emails and questions that she received from the participants in her cluster group in regards to information that they need. Her intent was to be a "wealth of information to them" since she has already been through the process, written her own grant for her building, and been successful in attaining the grant.

From this coach's perspective, the true strength of the cluster group was the networking piece "everybody putting their heads together to brainstorm ideas" (Interview, 2009). The coach goes on to state, "If a person tries to go through the process individually, then there is no exchange of ideas or calling after the meeting" (Interview, 2009). The weakness, according to this cluster coach, is "the participants not seeing the end picture first in regards to actually seeing an OK-ACTS grant at their beginning meeting" (Interview, 2009). In her opinion, participants need to see the end picture (an actual grant) and then have them back up and tell them how to get there. The second

major weakness of the program was "not providing enough training for the coaches" (Interview, 2009). Although all coaches are given a packet of information that can be read through, she believed that a two hour training that provides the program expectations and a question/answer session for cluster coaches would be extremely beneficial. She added, "Some of the answers I didn't have and I would have to refer them to Jean Cate and so I just think that might be a weakness" (Interview, 2009).

In relation to a professional learning community, she stated the training is extremely helpful since it simulates a coach in a principal's role setting up a PLC in a school, "learning how to job coach, learning how to facilitate talk, making things research based and data driven" (Interview, 2009). The utilization of technology with the cluster group focuses on the sharing of computer generated data spreadsheets, site benchmark data, and power points as well as utilizing united streaming to illustrate different instructional techniques in relation to technology integration. In addition to the cluster coach, other participants "brought in some data that they would use and how they were using it, websites and how they were using that, or blogs came up that other people were using that they would kind of teach the group about what they were doing at their schools" (Interview, 2009). This cluster coach also shared that technology impacted her coaching methods a lot because of the location of participants which ranged as far away as Guymon. Group members primarily utilized email to communicate back and forth in between cluster meetings. Many participants attached Microsoft word documents for the cluster coach to return with feedback. The primary impact of technology on this cluster group can be defined by the coach as demonstrating different ways that technology can be utilized, using technology to examine data, and providing feedback through email.

This cluster coach summed up the changes that she will make at her professional workplace as a result of this leadership experience in one word "accountability." She shares that as a part of the school district's evaluation document a teacher's utilization of technology to improve student achievement is addressed. She went on to elaborate:

> Am I really holding people in my building accountable, that it is an expectation to use technology? Thinking about it as far as professional learning communities, am I tying any type of technology question into any product that I'm expecting back? Then maybe I might have thrown a question like how do you intend to use technology to help you achieve this goal or something like that (Interview, 2009).

Although this cluster coach did not cite any major ideas gained from the cluster group, she picked up little ideas that she implemented like improving her website by adding links. She stated:

> I hadn't really thought about it so now our website we have links where they just click on it and go to the pbis.org or they can get to different places like SEAS even just to make it easy so they have links to some of the more highly used places or just like for resources and so that piece we added after the job coach thing (Interview, 2009).

In regards to suggestions for future cluster groups and coaches, this administrator reiterated an earlier suggestion to provide professional development and training for the cluster coaches. She also emphasized the importance of letting the participants know up front that "cluster meetings have two purposes" (Interview, 2009). One purpose is walking participants through how to get some action plan for the OK ACTS grant and the

other intention is for participants to network and get ideas that use technology to improve student achievement. She believed that it is imperative that participants know the expectations of the program at the very beginning of the professional development training. People in the group always went back to the action plan no matter what is trying to be accomplished by the coach. In addition more time for the meetings might be beneficial from the perspective of this cluster coach.

Additional suggestions by this administrator related to training coaches in dual platforms (MAC and PC) to enable them to better serve their constituents. Also she pointed out the lack of literature on technology's role in a professional learning community. She stated:

> I think it is really important because what you find sometimes is that when you have a teacher and it is almost every time when you find a teacher that kids have scored really highly on something almost always you can trace it back it has to do with technology almost always" (Interview, 2009).

As an illustration, she related an example of a history teacher who used google mail and a blog with his students and was able to share his ideas freely with his co-teachers when his test scores were the highest in his department. She explained:

> That whole community piece of it's not about you and me it's about the kids and then what is it that we do differently to achieve different results so to talk about that openly and so I think that once you get to that point then you can really start moving forward as a professional learning community, but I do think that technology plays a huge part in that and we don't seem to tie it in too much at this point" (Interview, 2009).

Superintendent (J). Serving as a cluster coach multiple times and receiving an OK-ACTS grant the very first year, distinguished this administrator from his fellow coaches. He described his experience being a part of the OK-ACTS cluster group as "a very positive experience in that collaboration with other principals on seeing how technology was used in their schools" (Interview, 2009). His perceived his role as a coach to be one of support, to relay personal experiences, and to be more of a "facilitator type" (Interview, 2009).

In describing this training to another educator, he stated "it is one of the more useful professional development that I have ever been through as an administrator" (Interview, 2009). He goes on to say that the Phase I leadership training was a positive experience that helped to jumpstart his school in utilizing more technology and providing more professional development for his teachers. He was able to instantly transfer the Phase I leadership training and bring it right back to his own school.

As a cluster coach he believed that his impact on the group was guidance, being able to offer his own experiences, and supporting the participants especially in the area of technology. He described the strength of the cluster as "the networking that you have being in a group" (Interview, 2009). He goes on to elaborate, "You're in a group with maybe 15 other administrators and you each have each other's contact information so you are able to network and find out what other schools are doing things like that" (Interview, 2009). In relation to a weakness, he pointed out that there were not necessarily the same type of school administrators and the same types of school in a cluster, but a range of participants from rural to urban schools. Although participants discover what is happening in larger schools, he believed that a lot of this information does not pertain to

the smaller schools which is definitely a negative. He does admit this diversity can also be viewed as a positive since you can see what a variety of schools are doing. He further explained:

> As a coach watching, I would see the smaller school administrators kind of group up together and the big school administrators kind of group up together just because of their experiences and things and that wasn't always bad you know…a natural pull (Interview, 2009).

This cluster coach also believed that this professional development was very helpful in relation to a professional learning community. He stated that schools "have always lagged behind in technology in relation to our businesses and a lot of that is because of the administrators" (Interview, 2009). He goes on to explain that if an administrator isn't using technology or anything advanced then the teachers are not going to be using it either. He explained, "The use of technology is kind of like the theme of OK-ACTS which is don't do more, but do it better and I think technology just helps us do a better job of what we are doing" (Interview, 2009). In this coach's opinion, technology may not make a teacher a better instructor, but it provides them with the capability to do more and to do it faster.

The cluster coach described himself as "pretty techie" and admits that he finds excuses to do things just so that he can utilize technology (Interview, 2009). The importance of this technology use carried over into the cluster group as he demonstrated a lot of different forms of technology and constantly shared what he was doing at his school with his cluster group. The cluster coach's use of technology at his school site included the following examples: utilizing technology to collaborate between two school

districts, using the FTP server to download and to transfer files that are too large to email, providing a school webpage that possesses the capabilities to access forms online as well as placing football/basketball games in flash files on the webpage so that relatives can watch the ball games that they miss. The only problem, according to this cluster coach, was the fact that the participants learned more from sharing ideas/networking than from some of the required activities.

Dealing with a broad spectrum of geography in the location of the participants in his cluster group, this coach utilized ITV for the administrators who were unable to attend their required cluster meetings. This technology was used by the participants to network with each other and took the place of a face-to-face meeting. He stated:

> So I would always find out through my cluster groups who did or who didn't (have an IT address) and the ones who did who couldn't make the meetings, I would tell them that we were going to have a meeting at 7:00 at night and I would broadcast from our school. Of course, I would get the IT addresses from the other schools and all that stuff so that worked out real well especially for the rural schools you know they didn't have to drive 250 miles for a one hour meeting. We could just do it over the internet (Interview, 2009).

"It's completely revamped our whole school, the way we do things," exclaimed this cluster coach when asked what changes have you made as a result of this leadership experience (Interview, 2009). In nine years, this coach's school moved from having no server and doing Accelerated Reader on floppy disks to possessing a smart board in almost every classroom, utilizing CPS units, and United Streaming. "Almost all that stuff or most of that stuff I found out through being part of the leadership group, or being a

coach, like I said networking with other people," he states (Interview, 2009). The main ideas gained from the cluster group for this coach revolved around "networking and being able to see what other schools are doing" (Interview, 2009). He provided several examples of technology that he is able to order for his school based on the recommendations of cluster group members. He elaborated, "You know we don't go to a lot of conferences and like that out here in the boondocks, so that is a big networking advantage to us (Interview, 2009).

This administrator stated that "having a little more contact" with the groups and one another would be extremely helpful in relation to suggestions for future cluster groups and coaches (Interview, 2009). He reiterated, "You don't have the time that you would like to, to be able to visit and get with other people in your cluster" (Interview, 2009). He suggested utilizing the ITV technology (once a month) and SKYPE to communicate and stated the following:

> There's a lot of things that we could do a better job of by actually using the technology that we learned about and cluster coaches must be technology literate in order to possess the skills and level of expertise to support the participants of the cluster group" (Interview, 2009).

In conclusion, this cluster coach believed in the benefits of the OK-ACTS leadership training so strongly that he will require it of the new principal that he will be hiring next year. There is no doubt in his mind that there is a direct correlation with his district's success with technology and his work with the OK-ACTS program. Although this particular coach was from one of the most rural districts represented in the study, his use and understanding of the importance of technology was exemplary. It was evident

that he modeled for his staff the benefits of technology integration.

Themes

A thorough thematic analysis of the interview transcripts reveals three primary themes which emerge from the data; the strength of network learning, the utilization of technology as a form of communication in a professional learning community, and the constructivism of leadership. The thematic analysis concentrated on the identification of themes that transcended the data and defined this professional development process for the participants in the study. Each of the identified themes is consistently present in the data from the participant interviews as wells as the interviews of the cluster coaches.

Qualitative researchers frequently display findings visually (Miles & Huberman, 1994), the following three comparison tables contain a representational sampling of the collected statements from both the participants and the cluster coaches in relation to the emergent themes. The statements contained in the tables are an accurate reflection of the perceptions of the study participants. This meaning making process for the qualitative researcher is continual. Human beings do not simply interpret meaning for a particular thing and move on, but revisit the interpretation, and how it fits within our worldview adjusting interpretative meanings accordingly (Blumer, 1969). While not all of the statements pertaining to the themes can be represented, the statements included in the table provide compelling evidence of the three emergent research themes.

First is comparison Table 3 representing qualitative information on the first theme network learning.

Table 3

A Comparison Table Representing Qualitative Information on Theme I Network Learning

Cluster Group Participant Statements	Cluster Coach Statements
• As a participant, I was able to work with other principals not only in our district, but in other districts as well.	• Being around the other principals is a great networking and idea harvest for me.
• I have the two day training in April which was very beneficial because of the relationships that we were able to develop with other administrators around the state.	• The other side of it is the individuals and seeing what is going on in other districts and listening to what their plans are and be able to help them or have them help me with plans.
• It is an opportunity to build some relationships with other educators in an area that I also focused on professional growth.	• You are in a group with maybe 15 other administrators and you each have each other's contact information so you are able to network and find out what other schools are doing…things like that.
• I think the strengths would be the networking and the sharing of ideas.	• To facilitate talk, to have them bring their ideas in, and share things that they were doing in their schools.

Table 3 (*continued*)

Cluster Group Participant Statements	Cluster Coach Statements
• The strength is that it breaks the larger group down into a smaller cluster of individuals that you get to know on a more intimate basis and can discuss things with.	• Networking is always a key component to any staff development piece. You can go listen to what other people are doing and having contacts after the meeting is over is probably the most beneficial piece to that.
• The strength is obviously professional development and the computer and the knowledge base that you get from the group.	• If you were just trying to do that individually you wouldn't have ideas to bounce off of one of the real strengths is the networking piece.
• It might simulate what a PLC looks like with school leaders and it gives you the opportunity to talk about what's working, talk about what you need to know, to network with other people who are working toward the same in other schools around the state of Oklahoma.	• That really stuck in my head about how much information I got on what they were doing at their schools to combat that and I don't know if they realize it or not but I didn't tell them that it was very, very helpful to me as an administrator to hear what was going on.

The results of the study indicated that participants as well as coaches recognize the strength of being a member of a leadership network. These comments from school leaders demonstrate that they value network learning:

- I think the strengths would be the networking and the sharing of ideas.
- Networking is always the key component to any staff development piece. You can go listen to what other people are doing.
- It is an opportunity to build some relationships with other educators.

The study participants expanded their leadership capacity as they progressed through inquiry, discourse and reflection with other administrators. All of their descriptions reflect positional or job-alike networking and several participants emphasize relational networking where direct communication among the participants reduces the feeling of isolation and establishes trust especially in relation to the OK-ACTS grant writing process. Although separated by their roles as either participants or coaches, all of the sentiments reflect similarity and agreement among those interviewed and can be condensed into the following three statements:

1) Network learning builds and develops relationships with other principals.
2) Network learning helps educators share ideas and find out what other schools and districts are doing.
3) Network learning provides an opportunity for individual professional growth.

Table 4 represents the second emerging theme which illustrates the use of technology as a communication tool in a professional learning community. Serving as a catalyst for PLC development, technology gives leaders and teachers a focus for shared learning and leadership (Atkinson et al. 2009).

Table 4

A Comparison Table Representing Qualitative Information on Theme II the Utilization of Technology as a Form of Communication in a PLC

Cluster Group Participant Statements	Cluster Coach Statements
• The conference call and the diversity of the group helped me to hear about some of the technology they had begun implementing and the way they were using it and the way they structured their decision-making through their technology committee.	• They are going to put you through the IDEALS framework to hone in on authenticity and how you incorporate technology, how to use that to look at your testing data and to be able to identify areas of weaknesses and strengths and how to focus your school.
• It's going to take discipline to remember to log into the Moodle server to know what's going on and if there's a blog that you want to participate in.	• The professional development jump started our school as far as using more technology and more professional development in those areas.
• What technology can do for you in saving time/organization whether using data sheets, Excel, whether it's internet, whether it's PowerPoint.	• Thinking about it as far as PLCs, am I tying any type of technology question into any product I'm expecting back.

Table 4 (*continued*)

Cluster Group Participant Statements	Cluster Coach Statements
• There are a lot of things like that (Talk Back TV, SKYPE, Marratech) and if you can get the technology out there it helps with that.	• How districts were using technology to involve their staff in PLCs so that has been something that I've added to my list.
• I believe that we have created a professional learning community in the fact that my teachers work together with the technology, with the lesson plans with all the different things that we have learned over the years from the K20 and they share among each other.	• A phone conference, emails including attachments, Moodle, Google Docs, discussion forums, wikis to develop learning experiences and I kind of left that conversation going wow, I've got to get more in depth with the technology.
• If the administrator isn't using technology then your teachers most likely aren't going to either. I think the use of technology is kind of like the theme of OK-ACTS which is don't do more, but do it better and I think that technology just helps us do a better job of what we are doing.	• We see there is a forum (a Moodle page and blog) there that will let us communicate regularly and easily. I can participate and see what other people want to know.

Although participants and coaches differ in their level of technological proficiency, the following statements represent the overlap in their responses:

1) Coaches and participants recognize the value and support the use of technology as a communication tool in a professional learning community.
2) Coaches utilize a wide range of technology to support collaboration and communication among the participants in their cluster group that include the following: email and attachments, Moodle, blogs, Google Docs/Google Mail (sharing, editing, adding ideas), conference calls, Talkback TV, power point slides, and discussion forums.

The technology that coaches apply with their cluster group seems to vary depending on the coach's level of proficiency and district accessibility. Although none of the coaches utilize SKYPE and wikis, these areas of technology are discussed in some cluster groups. Participants in the cluster group view the coach as a resource who sets up communication systems through the use of technology. They see technology as a way to save time, work smarter not harder, and to promote active participation.

Coaches believe their role is to model the effective use of technology not only for their cluster group, but in their schools. Although the statements made by participants and coaches in this research study support technology as an essential part of a professional learning community, one coach states, "if you look at the PLC like in their book Professional Learning Community there is no where hardly is there mentioned technology and I think it is really important" (Interview, 2009).

Table 5 represents a comparison table of the last emerging theme – contructivist leadership.

Table 5

A Comparison Table Representing Qualitative Information on Theme III Constructivist Leadership

Cluster Group Participant Statements	Cluster Coach Statements
• The thing that led me to the program was its reputation and I knew that it provided the resources and the opportunity for the grant and to develop leadership skills. • It helped develop our capacity as leaders in the role of a principal. That leadership is the focus of the training and structures of leadership.	• Getting leaders trained and become reflective on how to involve individuals whether they are teachers or staff or whoever is involved in a program having them involved in a collaborative way is important and I believe that the professional development that we went through is that kind of training.
• I feel like the coach isn't one specific job it can entail motivation, all these various other aspects. • She was very good at facilitating the discussion and probably the most outstanding thing I got from her was her leadership in writing the grant.	• Data supports decisions so it is inquiry based and using information to make decisions. It is reflective leadership, thinking about the ramifications, the unforeseen consequences, the good things that have come from it, and then how do you continue that.

Table 5 (*continued*)

Cluster Group Participant Statements	Cluster Coach Statements
• The coach to be there as that connection that safety net.	• The cluster coach gives direction and is the first line of communication.
• I found everyone to be themselves, leaders in their schools. I found them to be innovative in their thinking and for there to be a real collaborative feeling of helping each other.	• The mantra is about the leadership. How do you get people to collaborate, have a common vision, set of goals and develop a sense of responsibility, and get them to be reflective.
• When they talked about structures for communication they included some community ideas, some leadership within the building.	• The cluster coach sets the tone for the whole group, you're there for their support and you will help them through all the way.
• Using the community of learners, to look and to get feedback from each other on what is effective, what's working and that community can be teacher to teacher, administrator to teacher, teacher to students, student to student, and from student to parent.	• If you expect people to actively construct their own knowledge then the style of leadership that you promote in a school would be very similar where teachers construct their own instructional knowledge and the school revolves around those conversations.

Although participants and coaches never specifically use the term constructivist leadership, their comments and responses clearly indicated that this type of leadership is present. Participants and coaches showed agreement in the following areas:

1) The cluster coaches provided professional development experiences that were conducive to learning and embodied professional growth, collaboration, authenticity, and reflection.
2) Participants established relationships among themselves and with their coaches.
3) The coaches fostered and built leadership capacity among the participants.

The coaches worked to facilitate conversations that guided meaning-making for the participants and provided a common purpose. As stated by one cluster coach:

> It's about how do you get people to collaborate? How do you get people to have a common vision and set of goals? How do you move them that direction? How do you get people to develop a sense of responsibility and a willingness to take on that responsibility? Then how do you get them to be reflective after it is all over with? After you have gone through a process and how do you reflect back on it (Interview, 2009)?

Participants prepare as educational leaders who can understand and accept these challenges because they have experienced the mutual conception of meaning and knowledge in a purposeful learning community geared for individual development. The reciprocal processes that comprise constructivist leadership are present and serve as a framework for professional growth in this community of learners.

Conclusion

As participants and coaches responded to the interview questions three primary themes emerged from the qualitative data; the strength of network learning, the utilization of technology as a form of communication in a professional learning community, and the constructivism of leadership. The first section of the chapter deals with a summary analysis of the responses from the five administrators involved in the initial Phase I Leadership development training. The second section of the chapter represents a summary analysis of the responses from five administrators who have served as cluster coaches for the Phase I training. The third section of the chapter represents the three emerging themes in comparison tables, the overlap in responses of both of these individual groups, and their multiple perspectives.

CHAPTER FIVE

Interpretations

This study provides insight into the experiences of school administrators to gain greater understanding of how they develop the necessary skills to implement, lead, and support technology rich professional learning communities. The qualitative data, collected through semi-structured interviews with open ended questions, illustrates the effectiveness of professional development that substantially influences their growth as technology leaders from the perspectives of the participants as well as peer coaches. Two qualitative research questions were explored in the study:

1) What are the perceptions of educational administrators who are being trained to lead technology rich professional learning communities about their professional development experiences?
2) What are the perceptions of peer coaches as they assist administrators in establishing a professional learning community with an emphasis on technology in their schools

Review of the Major Findings

The five educational administrators who were participants in the cluster groups perceive the network learning component as one of the greatest benefits of the Phase I Leadership professional development. Network learning can be described as the spirit of collaborative capacity building and occurs when people from different schools in a network engage with one another to inquire into best practice, to innovate, to exchange information, and to learn together (Jackson, 2004). It differs from networking in that it

does not happen by accident, but by design where new professional relationships and different forms of facilitation are requisite (Jackson, 2004).

Still in its infancy, network theory revolves around four traditions of networks. Positional networking focuses on position or roles (Weber, 1947) and pertains to job-alike networking experiences with educators like principals meeting together or science teachers sharing experiences with other science teachers (Atkinson, Cate, O'Hair, & Slater, 2009). Relational networking reflects the direct communication among participants in a network which is a tradition that reduces isolation and establishes trust (O'Hair & Veugelers, 2005). Cultural networking seeks to understand symbols, meanings, and customs within and across organizations (Schein, 2004). In addition, the newer and emergent technological networking or 'networked societies' is characterized by the diverse interactions across multiple networks and flattened hierarchies (Friedman, 2005, Haythornthwaite & Wellman, 2002).

Teachers learn best by sharing ideas, planning collaboratively, critiquing the ideas and experiences of each other, and decreasing the isolation encountered in most schools (O'Hair, McLaughlin, & Reitzug, 2000). Evidence exists that schools successful in transformational school improvement efforts have access to external sources of support or networks (Allen & Hensley, 2005; Darling-Hammond & McLaughlin, 1995; Lieberman & Miller, 1990, 2007; Newmann & Wehlage, 1995). Research supports the statement that networks are professional communities on a larger scale (Lieberman & Miller, 20007) helping to shape new forms of professional development that better represent what educators know about adult learning and sustaining change over time (Atkinson et al). Networks are organized around the interests as well as the needs of the

participants with the participants in these networks sharing goals, visions, and communication (Lieberman, 2000, 2002).

Supporting the idea of using networks for leadership development, Yee (1997) feels that building a network for program participants promotes continuing professional and personal development, expands a trusted peer group, and creates time for reading, reflection, and thoughtful discussion. There is no doubt in the minds of the participants of this study and their cluster coaches that network learning is a vital part of this professional development process, one of the leadership program's greatest strengths, and leads to the formation of a PLC. The participants described this purposeful professional development experience in the following way:

- An opportunity to work with other principals and build relationships.
- An opportunity to share and discuss ideas.
- The opportunity to simulate a PLC with other people working toward the same goals in their schools.

The participants' responses epitomize the characteristics of network learning and what they perceived as an integral part of their professional development experience as educational leaders learning more about leading professional learning communities.

Participants also perceived the importance of technology as a communication tool in a professional learning community although their technology skills varied tremendously among this group of administrators. All of the participants had varying experiences with their cluster coaches and the types of technology that were utilized to communicate with the group. For some participants email and conference calls were the primary forms of technology that were used for communication purposes. Other

participants learned about logging into the Moodle (Modular Object-Oriented Dynamic learning Environment) page, blogging, discussion forums, and sharing documents through Google. All participants seemed to recognize technology as a driving force, an organizational tool, and a time saver although their lack of skill and knowledge base prohibit the majority of them from being proficient users of all that technology has to offer. Several participants expressed frustration at "not knowing enough" in relation to technology and that it requires discipline to remember to log into the Moodle server to find out what is going on in the cluster group. In summary, participants realize the importance of technology to a PLC, but realize their lack of proficiency with this crucial communicative tool. In *Curriculum 21 Essential Education for a Changing World* Heidi Hayes Jacobs (2010) wonders if students feel that they are entering a simulation of life in the 1980's as they walk through the school doors each morning and then return to the 21st century as they leave every day.

> As educators, our challenge is to match the needs of our learners to a world that is changing with great rapidity. To meet this challenge, we need to become strategic learners ourselves by deliberately expanding our perspectives and updating our approaches (Jacobs, 2010, p.7).

She urges teachers to look forward and to not be restricted by what they know and are currently able to do (Jacobs, 2010). Running schools on replay no longer works and it is critical to become active researchers and developers of innovations and new directions (Jacobs, 2010).

Another perception by the participants is that this professional development experience was devised in a way that provided them the opportunity to develop their

leadership capacity and to learn about the structures of leadership within the framework of a professional learning community. They viewed the K20 Center staff as well as their cluster coaches as the constructors of this leadership experience describing them as innovative, knowledgeable about the process, facilitators of group discussions, and promoters of technology use. When describing the impact of the cluster coach on the group the following phrases were used by the participants:

- He kept us going.
- The coach is the person who keeps us involved and focused.
- The coach is there for that connection and to give you a safety net.
- He was the funnel for questions and he would provide us with answers.
- He was kind of like an accountability officer.

These statements made by the participants support research by Saphier and King (1995) in relation to collegial coaching which strengthens collegiality, experimentation, tangible support, and reaching out to the knowledge base about teaching, and honest and open communication. Dividing the large group of school administrators into smaller clusters facilitated dialogue and networking. The coaches added strength to the structures by facilitating collaboration and networking by supporting the leadership learning process (Fink & Resnick, 2001).

Cluster participants described themselves as a community of learners, learning how to lead by building capacity for group decision-making and technology use. A primary goal of the Phase I Leadership training is to prepare administrators to write an OK-ACTS technology grant; this was also recognized by the participants as an aspect of the leadership training. When asked to state the weaknesses of the program, participants

mentioned being out of their school buildings, the physical distance from the K20 Center, and the varied level of technology skills among their cluster group. Ultimately, participants viewed their professional development as a professional growth experience, developing their capacity as learners and leaders who recognize the importance of technology for their professional learning community.

Peer Coaches

The five educational administrators who served as peer coaches also perceive the network learning component as one of the greatest benefits of the Phase I Leadership professional development. From "idea harvest" to "working with many different individuals," the coaches described their network learning experience in a way that indicates that the peer coaches learned as much from the participants as the participants learned from the peer coaches. In fact, several of the administrators cited the network component as the primary reason that they agreed to serve as a peer coach. The coaches did indicate that they felt responsible to facilitate the talk that lead to participants bringing in their own ideas and sharing what they were doing in their own schools.

Peer coaches described their role in the Phase I Leadership professional development as that of a liaison, a facilitator, and a sounding board between the participants and the K20 Center. The majority of the coaches saw their role as pivotal in setting the tone for the whole group and being the first line of communication for participants. They understood that they were there to offer guidance, experience, and support through technology. Only one coach indicated that he felt unsure of the impact that he had on the group as a whole.

The peer coaches utilized technology to communicate with their cluster groups in

myriad ways. All coaches recognized the importance of technology to the cluster group and used it throughout the leadership training. The types of technology used to communicate with the participants seemed to vary based on the skill level of the coaches, the kind of technology the coaches had access to, and the needs of the group. One of the coaches was able to set up a Moodle site while other coaches utilized email, conference calls, Google Docs, and tele-conferencing to communicate with members of the cluster group. Moodle, abbreviation for Modular Object-Oriented Dynamic Learning Environment, is a free and open-source e-learning software platform designed to help educators create online courses with a focus on interaction and collaborative construction of content. The use of Moodle by one of the cluster coaches allowed for discussion forums to be posted and for participants to have on-going discussions online. Only one of the cluster coaches felt the use of technology with his group was minimal since he primarily utilized email. The cluster coaches from rural communities seemed to have greater access to teleconferencing and understood the need to utilize this resource in order for their participants to not have to drive in for a cluster meeting. All of the coaches understood and emphasized the role of technology in student achievement and data driven decision-making with their participants in addition to being a communication tool.

The coaches felt great responsibility in constructing this leadership experience for the participants. Differing from the traditional concept of leadership, constructivist leadership can be defined as the "reciprocal learning processes that enable participants in an educational community to construct meanings that lead toward a common purpose about schooling" and occur within the contexts of relationships (Lambert, 1995, p. 29).

Constructivist leadership allows individuals multiple opportunities to analyze, reflect, and process information in a setting that fosters learning and growth (Lambert, 1995). A constructivist leader exhibits the following behaviors:

1) Builds, creates, and maintains a positive environment where all stakeholders actively engage in learning, social interactions, and sharing of information.
2) Celebrates and recognizes the accomplishments of all organization members.
3) Communicates utilizing appropriate instruments of language and technology to promote learning and nurture discussion among others.
4) Envisions and maintains a vision that is shared among participants and reflects an environment based upon knowledgeable decisions.
5) Learns and participates in continuous professional improvement.
6) Mentors by developing leadership skills in oneself and others.
7) Promotes working with other professionals in the continuous improvement of the organization by capitalizing on opportunities to further goals.
8) Encourages reflective practice.
9) Provides a positive environment that supports the intellectual, personal, and social development of all members of the organization

(Boyer, 2005).

Finding strength in the diversity of the people involved, the coaches lead by example and utilized the collaborative processes to build, create, and maintain a positive environment in which all of the stakeholders were actively engaged in learning. Knowing the importance of communication, coaches utilized technology to promote

learning and nurture discussion among their cluster group participants encouraging reflective practice.

As in an earlier study on Phase I Leadership, coaches expressed a change in themselves (Cate & O'Hair, 2009). One coach shares that he feels that he learned as much from the participants in his cluster as they learned from him and goes on to state that they are still friends today. Coaches also seemed to learn more from the aspect of being a coach as opposed to being merely a participant (Cate & O'Hair, 2009). This may be attributed to the fact that this is the second time that coaches are hearing the information and interacting with this professional development model. Learning for the coaches is continuous as participants share, clarify and question their experiences.

The coaches were also specific as they identified the weaknesses of the program. One coach spoke of participating in a cluster group during his initial Phase I training, going back to his school, and feeling alone with no one at his school to share the experience. This feeling of aloneness, explains why he liked the other phases of the training more than the initial phase. Another coach cites the geography and how far apart the members of the cluster group were from each other. It was difficult for him to accommodate all of their needs once they returned to their sites and the use of technology was crucial in bridging this gap. Several administrators also mentioned the need for additional training so that expectations were clear on their role and responsibilities as a peer coach. Finally, although diversity was listed as one of the strengths of this professional development process, a few coaches also felt it was a weakness. One coach described the diversity of the cluster group which did not contain the same type of school administrators or the same types of schools (rural versus suburban). Information that

might pertain to a principal of a rural school might not be pertinent to a principal from an urban area. Participants in the cluster group also came with varying degrees of technological ability which greatly affected the allocation of the coach's time.

In summary, the administrators who served as peer coaches are proponents of the Phase I Leadership Training. They believe in the IDEALS framework (see Appendix C) and the professional development promoted by the K20 Center. They viewed their acceptance to serve as cluster coaches as a way to give back to the K20 Center and to promote the establishment of professional learning communities with an emphasis on technology in schools.

The amount of technology utilized by the cluster coaches varied, depending on their personal skill level, and also seemed to be influenced by their locations. The coaches from rural areas of the state seemed to be the most technology savvy, apparently out of necessity. These coaches seemed to be more cognizant of providing multiple opportunities for the participants in their groups, communicating through technologies such as video conferencing and alleviating travel time. Coaches from rural areas also shared examples of how technology impacts their school community. One coach told of a collaboration process between his school district and a district in another part of the state that was aided through technology and hugely successful. This same coach talked about placing football games and basketball games in flash files on the school webpage so relatives and grandparents could watch ball games that they had missed through united streaming of football games for patrons to view from home.

Personal Reflections by the Researcher

Educational administrators who participated in the Phase I Leadership

professional development training not only learned about professional learning communities, but by being a part of a network of learning they experienced one. The professional development training also demonstrated research-based leadership strategies to improve student learning. Supported by peer coaches, the participants were members of a cluster group that fostered a collaborative and supportive environment for on-going learning. Just as in a PLC, the cluster group was characterized by a sense of shared purpose, collaboration, and collective responsibility among the educational administrators and the cluster coaches. A significant difference, however, was the emphasis placed on the use of technology as a communication tool within this PLC. The cluster coaches modeled technology use for the participants in the following ways: email and attachments, Moodle, blogs, Google Docs/Google Mail (sharing, editing, adding ideas), conference calls, Talkback TV, power point slides, and discussion forums.

Participants came to the training with a wide range of technological skill, but all of them left with a greater knowledge base of how to incorporate technology as a tool to accelerate the school improvement process. Coaches brought different sets of technology skills to their interactions with the cluster groups. There was no consistency among the cluster groups with the types of technology that they were learning about and using which in the researcher's mind is a definite weakness in the training.

Participants as well as coaches expressed multiple benefits from the professional development training and only one coach indicated that he felt that he did not have that much of an impact on his cluster group. It is interesting to note, however, that this coach was selected based on the interview of one of the participants from his cluster group who gave multiple examples of his positive work with the group. The researcher expected to

find more dissatisfaction on the part of the cluster coaches in their interactions with their group based on her personal experiences of being a coach and having a feeling inadequacy, but this was not the case. Most of the coaches felt satisfied with the job that they did and the relationships that they developed with the participants. The researcher agrees with the coaches in their suggestion that more professional development training before they begin the role of the coach would be extremely beneficial. Coaches need to clearly understand their role, be consistent in the information that they share with the participants of their cluster group, and model the use of technology in a uniform way.

Personal Views Compared to the Literature

The Phase I Leadership professional development training provides administrators with the skills that they need to support a professional learning community in their school that utilizes technology to increase student achievement. Extensive research endorses and advocates the development of PLCs for the following reasons:

- There is a clear link between PLCs and promoting student achievement (Newmann & Wehlage, 1995).
- Student achievement gains are significantly higher in PLC schools focusing on authentic intellectual work (Newmann & Wehlage, 1995).
- Achievement gaps significantly narrow between students from different backgrounds in a school organized as a PLC (Hord, 1997).

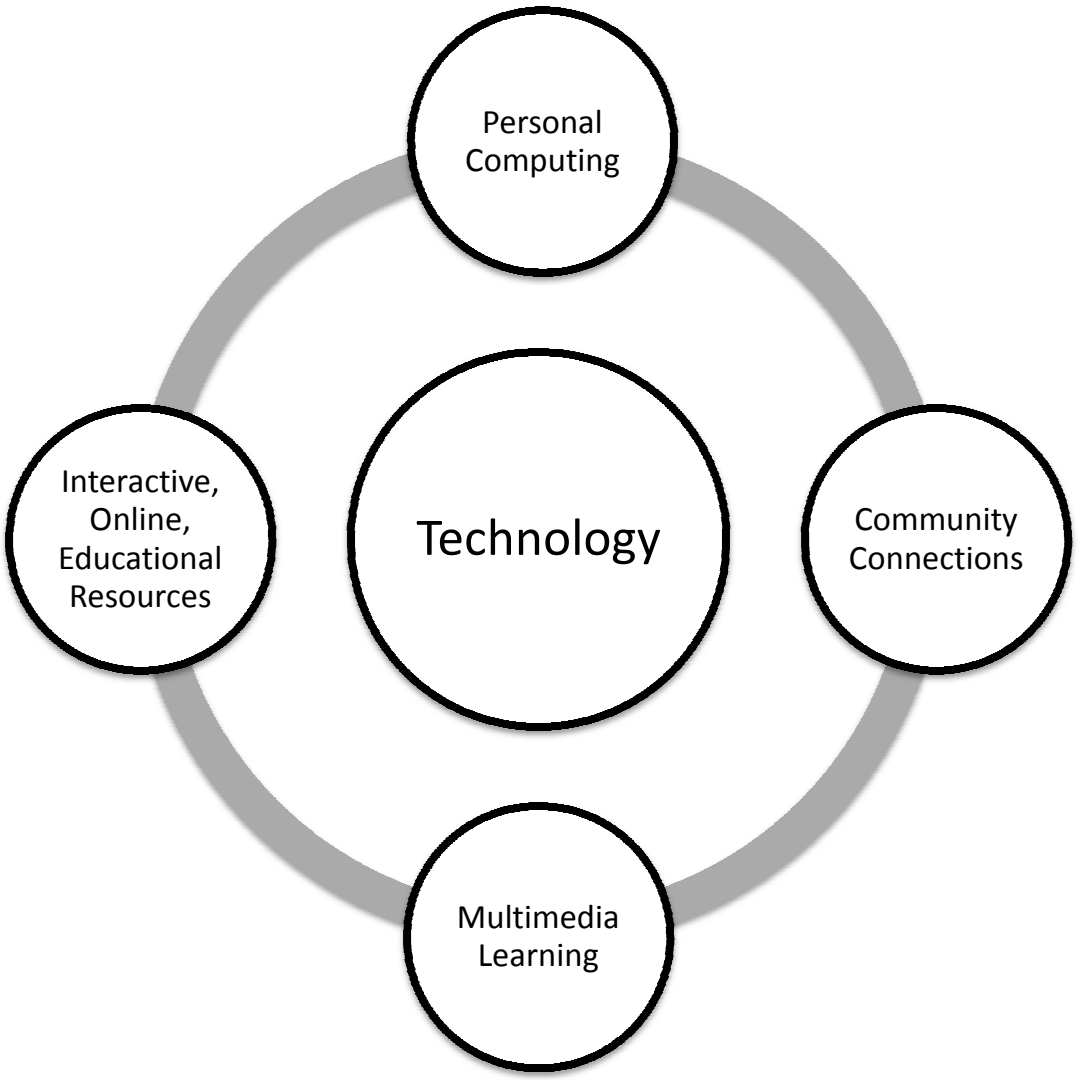
Research also shows that technology integration processes enhance collective learning that contributes to the development of a community of learners (Riel and Fulton 2001; Burns 2002; Dexter, Seashore et al. 2002; Williams, Atkinson et al. 2007). Teachers working together in the integration of technology collectively gain knowledge, share best

practices, and work collaboratively in building leadership capacity (Williams, Atkinson et al. 2008). In addition, effective uses of available technologies can optimize time on task and maximize the success of professional learning communities (Carroll, 2000).

It is imperative to give administrators the necessary skills to form an intelligent – technology rich professional learning community that includes technology as a communication and learning tool. Just as an Intelligent Classroom provides an interactive and collaborative learning environment for students, an Intelligent PLC will promote innovation, growth, and value for all stakeholders. An Intelligent PLC contains all of the traditional elements of a PLC, but is supported by 21st Century technologies in a way that promotes contributing, collaborating, and creating.

The Intelligent PLC concept evolved from three separate entities and combines the ideas behind Dell Higher Education Solutions Intelligent Classroom with Heidi Hayes Jacobs (2010) *Curriculum 21 Essential Education for a Changing World*. An Intelligent Classroom is a combination of presentation technology with personal computing. Dell defines a successful classroom as one that utilizes multimedia learning, personal computing, and online, curriculum and educational resources (retrieved March 20, 2011 from http://www.dell.com/content/topics/global.aspx/sitelets/solutions/industry_ application/pub). Community connections are added to the model by the researcher to encompass all of the stakeholders in a school community. Figure 1 represents the combination of Dell Higher Education Solutions Intelligent Classroom with technology as a communication tool.

Figure 1. Combining Dell Higher Education Solutions Intelligent Classroom with Technology as a Communication Tool



In *Curriculum 21 Essential Education for a Changing* World, Jacobs (2010) lists the types of products and performances that contemporary professionals should be using in the range of subjects that they teach as well as resources that schools can have available to teachers. Figure 2 represents an Intelligent Classroom, including community connections, combined with Heidi Hayes Jacobs work.

Figure 2. An Intelligent Classroom Combined with Heidi Hayes Jacobs *Curriculum 21 Essential Education for a Changing World.*

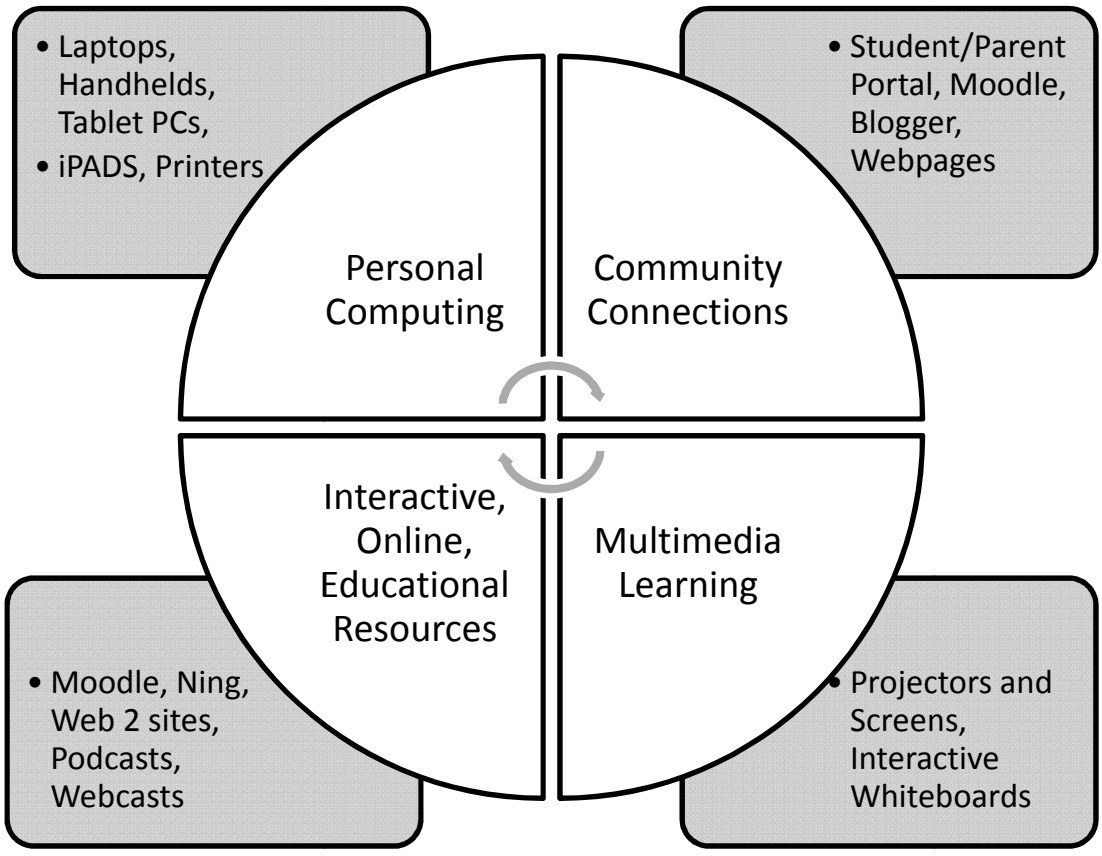
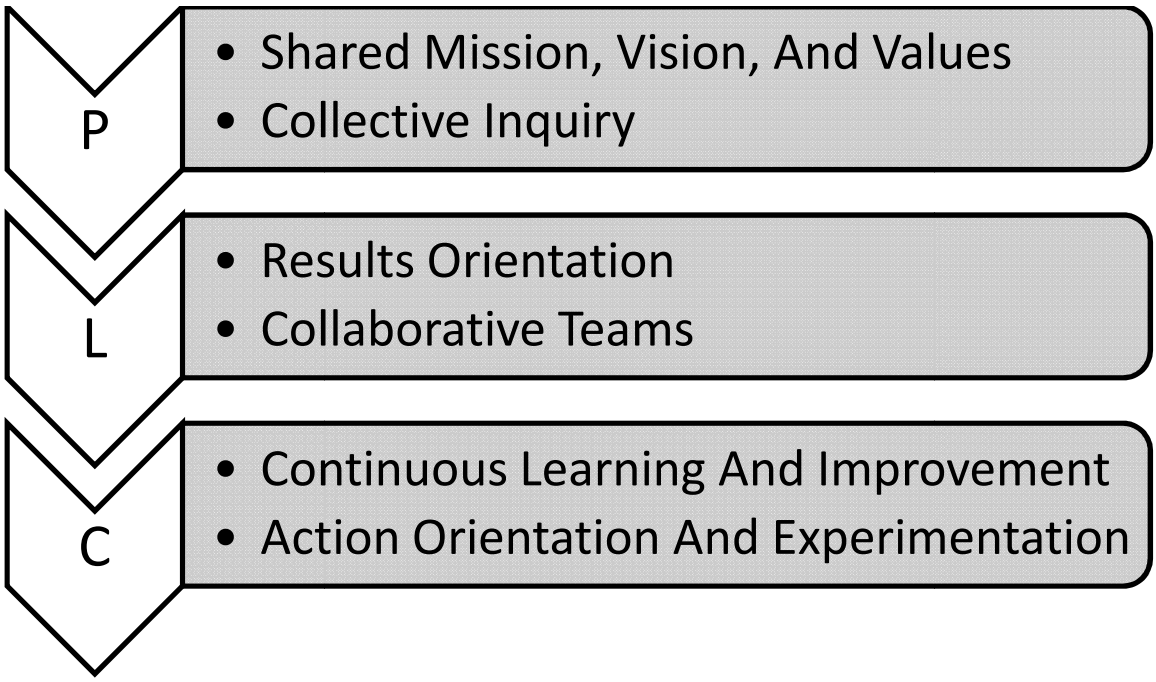


Figure 3 identifies the common features in a professional learning community. In this culture, the stakeholders share a high value for learning, work to enhance curriculum/instruction, and focus on students.

Figure 3. Fundamental Components of a Professional Learning Community (PLC)



The Intelligent PLC concept evolved as a progression of ideas that combine the concepts behind the Dell Intelligent Classroom, *Curriculum 21 Essential Education for a Changing World* and a professional learning community. An Intelligent PLC will help teachers and administrators respond to the new reality of producing students that possess the global knowledge, skills, and perspectives that will be important in the 21st century (Stewart, 2010). The following diagram depicts an Intelligent – Technology Rich PLC supported by technology as a communication and learning tool.

Figure 4. An Intelligent – Technology Rich Professional Learning Community

Moving beyond email and desktop publishing, an Intelligent – Technology Rich PLC encompasses the creative commitment of participants to discussion, authenticity, and critical thinking through the use of multimedia learning, personal computing, community engagement, and interactive, online educational resources. Multimedia learning includes the technologies that help support the high level of personal learning and communication tools needed in a PLC. Multimedia learning includes the following technologies: projectors, screens, webcams, wireless pads, interactive whiteboards, response systems, LCD TVs, digital, flip and document cameras, camcorders, and iPODS. Although this list is constantly changing due to the rapid growth of technology, administrators have the capabilities to engage their faculties (projectors/screens, webcams, interactive whiteboards), provide avenues of personal expression (iPods, digital/flip cameras, camcorders), and seek input (response systems).

Personal computing from handhelds to iPADS, allow administrators the flexibility to observe instruction in classrooms and give instant feedback. District documents downloaded to handhelds or tablet PCs allow further flexibility for a school administrator in the teacher observation, evaluation, and assessment process. Coupled with the convenience of personal computing are interactive, online, educational resources such as Ning, Web 2.0 sites, Blogs, and Twitter that allow administrators the capabilities to target and personalize learning at their school sites and connect to other learning networks. One such educational resource is Moodle.

Moodle stands for Modular Object-Oriented Dynamic Learning Environment and is a Course Management System (CMS) also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a web-based online learning

portal that is password protected with a district login and course enrollment key. It is a free and open source web application that educators can use to create helpful online learning sites for teachers, students, and parents. Moodle possesses the following capabilities for creating an online active website for students: files, links, news and calendar, forums, chat, wiki, assignments, glossary, quizzes, embedded video and games. To work, it needs to be installed on a web server, either on a personal computer or one at a web hosting company. A district Moodle administrator monitors the program.

Many users employ the activity modules (such as forums, databases, and wikis) to build richly collaborative communities of learning around their subject matter (in the social constructionist tradition), while others prefer to use Moodle as a way to deliver content to students and assess learning using assignments or quizzes posted on the website. One veteran teacher describes Moodle as an interactive tool that engages students and one that students describe as the kids' Facebook. Another teacher describes Moodle as a motivating tool for students moving their educational experiences beyond the classroom as well as placing many teaching tools in one box for the instructor.

An administrator can utilize a Moodle page to disperse information to a school staff on a daily basis and provide a forum for group discussion. The variety of the features of Moodle (chats, forums, quizzes, wikis, and calendar) provides a central location for accessing, discussing, and posting information. The focus of Moodle is to manage and promote learning in an engaging and interactive way for students as well as adults. In a PLC where collective inquiry, collaborative teams, and continuous learning are the focus, Moodle provides this forum. This is one way in which a leader in a learning community can establish structures (Morrisey, 2000). Leaders are utilizing

technology to bring coherence to the many initiatives in which they are involved. Fullan (2001). Fullan (2001) describes the necessity for building coherence as a pivotal strategy in leading change efforts.

In addition to Moodle, Web 2.0 sites provide an array of free tools for stakeholders in a PLC. Although Google may be best known as an Internet search engine, this website offers a wide variety of free resources that teachers and students can use to enhance their learning. Google Books Advanced Search presents full-length books that are in the public domain and available for downloading as well as printing. The advanced menu allows a user the capability to refine a search and users have the capability to build a virtual bookshelf of their favorite literature. Google Scholar is designed to help students research works from scholarly journals to legal opinions. Google News supports students in their quest to search the web for current events with the ability to refine their searches by specifying a particular news source or an author. Google News Widgets display top news stories on a personal blog or website.

Google for Educators provides the following tools to communicate, present, and share information: Blogger, Calendar, Docs, Groups, Page Creator, Picasa, SketchUp, Google Notebook and Picnik. Google tools support educators and help them to expand their knowledge of 21st century learning. Google provides a teachers' guide and examples of how other educators are using the tools in their classrooms. Also in an effort to foster better communication and collaboration among fellow teachers, there is a Google for Educators Discussion Group where Google posts new announcements and teachers can share instructional ideas. The following table represents the tools listed above and a concise description of their function.

Table 6

Current Tools Available in Google

Tools	Description
Blogger	A forum for sharing work, notes, calendars, upcoming events, and pictures online as well as collaborative projects.
Calendar	Teachers, administrators and students share time-related information viewed from any internet-connected computer.
Docs	An online word processor, spreadsheet and presentation editor that creates, stores, and shares instantly fostering collaboration online in real time.
Groups	A place for safe and secure communication and collaboration. Groups may be set up to be public or private.
Page Creator	A tool to create a customized webpage containing images and links to other webpages.
Picasa	A free software download to find, edit, and share pictures.
SketchUp	An easy program to create, modify and share 3D models.
Google Notebook	A single online location that allows for browsing, clipping, and organizing information from across the internet and is accessible from any computer.
Picnik	A guide for classroom resources/lesson plans and to chat with other educators.

The issue here is not to use technology for technology's sake but rather to use it as a tool of engagement to convey content more powerfully and efficiently (Rosen, 2011). The new national plan for school technology embraces the power of technology to incorporate choice, personalization, interactivity, and multiple ways for students to incorporate richer multifaceted mental representations of information (Scherer, 2011). The emphasis for teachers is to be highly connected to technology in order to be successful in 21st century schools (Scherer, 2011). The implication is clear that along with teachers, administrators must be highly connected to technology as well to lead these types of school communities. The following statements represent the National Technology Goals:

- Use technology to help raise the percentage of young people with two- or four-year college degrees from 39 percent to 60 percent by 2020.
- Provide "broadband everywhere" to serve learners inside and outside schools.
- Put a computing device in the hands of every student.
- Make connectedness the hallmark of effective teaching.
- Create an online learning registry of content developed by federal government agencies.
- Fund the research and development of open-source educational resources.
- Fund research about how online communities of practice can improve teaching and learning.
- Create a national initiative that defines productivity in education and establishes metrics for measuring it.

(Office of Educational Technology, U.S. Department of Education, 2010).

The challenge for administrators is to understand the diversity of opportunities that new technologies can provide for a learning environment and how to manage them effectively. As a technology leader, a principal has three primary roles: role model, instructional leader, and visionary (Hope & Stakemas, 1999). This is complicated by the rapidly changing face of technology. However, a principal must be adept at certain technological tools to model their use for teachers. Principals, who value technology, making it a routine portion of their jobs, exemplify a commitment to this medium and can personally help others to acquire technology expertise (Brockmeier, Sermon, & Hope, 2005). A principal's technology skills should involve learning how to operate technology as well as utilizing it to perform administrative duties, especially when communicating with others (Gosmire & Grady, 2007).

As an instructional leader, the building level principal maintains the primary responsibility of facilitating the teachers' integration of technology into the teaching and learning process (Gosmire & Grady, 2007). It is the principal's role to establish a context for technology in the school which includes understanding how the technology can be used to restructure learning, empower teachers, and help students become more technology literate (Brockmeier, Sermon, & Hope, 2005). Research conducted by Anderson and Dexter (2005) confirms that successful technology implementation in the teaching and learning process is seriously threatened unless a key administrator becomes actively involved. The Intelligent PLC model gives administrators a technology framework to connect their learning community, model technology use, and become actively engaged in the teaching and learning process.

Limitations of the Study

One of the primary limitations of the study, was the fact that only one participant and coach were from the same cluster group. All of the other participants and cluster coaches interviewed in the study were from different clusters and there was not a one-on- one match up between a participant and the coach that served for that cluster. Although this may have been one of the limitations of the study, it may also be considered a strength since there were a diversity of comments that spanned across multiple cluster groups (nine) as opposed to just five if there had been a direct match between participants and the coaches that served directly for that group.

Suggestions for Future Research

In this qualitative study, educational administrators participate in professional development training to lead technology rich professional learning communities mentored by an administrative coach. It was found that the coaches possessed broader experiences and a deeper understanding of the content having the benefit of having been a participant and then hearing the material again as a coach. Participants left the training with a greater knowledge base on a professional learning community and the role of technology in supporting, strengthening, and promoting a PLC. Participants as well as coaches vary in their technological ability, but all see the importance of technology in a learning community. The question remains, how do we give administrators the technology skills that are necessary for 21st century learning?

Past research on leadership preparation program outcomes have revolved around the following topics: leadership expertise (Furtwengler & Furtwengler, 1998), preparedness for the principalship (Hewitson, 1995), and leadership dispositions

(Rucinski & Bauch, 2006). Other studies have looked at the relationship between selected innovative program features and participant learning and leading outcomes (Copland, 2000; Hart, 1993; Hermond, 1999; Pounder, 1995; Short & Rinehart, 1993). Results of these studies indicate that program content and delivery influence what a graduate can learn and do as a school leader (Orr & Orphanos, 2011). The significance here is that research on program content emphasizing the utilization of technology to support engagement, communication, and collaboration within a school operating as a professional learning community is needed in leadership preparation programs at the university level.

Implications for Practice

Principals are the instructional leaders of their schools. Research supports the importance of the principal as a leader of educational reform and being instrumental in providing structures for communities of practice (Huffman & Hipp, 2003; Marzano, Waters, & McNulty (2005); Wenger, 2002, Williams, 2006). Administrators leading teachers and students into the 21st century can no longer afford to be digital immigrants. The utilization of technology will optimize the potential of a professional learning community by supporting communication and collaboration. When principals become leaders of learning, they model the power of professional development for their staffs.

This study illustrates the critical importance of a PLC supported and enriched by technology. Participants in the study recognized the tremendous benefits of a PLC and the importance of possessing the necessary skills to be a technology leader in their buildings. The participants in the study also received professional support through being a member of a network of learning which in turn led to personal networks serving the

school leader through the use of technology as a communication and learning tool (Yee, 1998).

Cluster coaches commented on the variety of skill levels in relation to technology that existed in their groups. Coaches constructed professional development experiences for the participants that were conducive to learning, and embodied professional growth, collaboration, authenticity, and reflection. Coaches utilized a variety of technology to communicate and share information with the participants in their groups. For administrators already in the field, job-embedded professional development related to technology is essential, should be continuous, and constructivist in nature in order to support systemic change (Bernhardt, 2002; Sparks, 1997).

The results of this interpretive qualitative study supported by thematic analysis illustrates the power of network learning, recognizes the importance of technology as a communication tool in a PLC, and confirms the theory of constructivist leadership. The study adds to the literature on the role of technology in a professional learning community specifically targeting its importance as a communication and learning tool which leads to the development of the concept of an Intelligent – Technology Rich Professional Learning Community (iPLC) where technology use is ongoing. Qualitative interpretations are similar to findings in an earlier quantitative study (Cate & O'Hair, 2007). In addition, findings support a mixed methods study where technology integration was found to be instrumental in systemic school improvement in regards to collaboration (Williams, 2006).

Implications for Preparation Programs

Principal preparation programs at the university level must move beyond philosophy to give future administrators the hands-on, practical tools that they need to be successful in a technologically advanced society supported by authenticity. Colleges and universities must develop educational leaders that are technologically sound, competent and possess the critical skills necessary to lead our schools into the 21st century. Even highly successful principals provide a lukewarm response when asked about their principal preparation programs (Gray & Streshly, 2008).

Program modifications are called for in pedagogy and curriculum. In this study experienced administrators served as cluster coaches for other administrators. These coaches formed relationships with the participants and constructed learning experiences laying the foundation for a professional learning community. There is no legitimate reason why mentorships and coaching could not begin in preparation programs for educational leadership and lead to a field experience practicum for prospective administrators. Research results by Gray and Streshly (2008) suggest mentorship throughout the educational leadership preparation process is warranted.

In regards to preparation program curriculum, more time and effort must be devoted to the development of technology skills and its use as a communication and learning tool. The integration of technology into the curriculum to promote student learning is a vital skill that all administrators must have to lead their schools into the 21st century. Invariably, technology is consistently omitted in lists of skill sets required by educational leaders. In the book *From Good Schools to Great Schools*, Gray and Streshly

(2008) present ten suggestions for architects of principal preparation programs based on their qualitative research study. Noticeably absent in the list is any skill or component related to technology. It is time for leadership preparation programs to gain a global perspective and join the reality of preparing administrators to be literate in the 21st century allowing them to gain the skills to make careful decisions about technologies and their uses.

Conclusion

In the final chapter of this work, the perceptions of the research participants were integrated with the existing literature. The participants and the cluster coaches agreed on the strength of network learning and cited this as one of the Phase I Leadership Training's greatest benefits. All participants seemed to recognize technology as a driving force, an organizational tool, and a time saver. However, their lack of expertise in the area of technology prohibits the majority of the administrators involved in the training from being proficient users of all that technology has to offer. Cluster participants also described themselves as a community of learners, discovering how to lead by building capacity for group decision-making and technology use. Participants established relationships among themselves and with their coaches. The cluster coaches constructed professional development experiences that embodied professional growth, collaboration, authenticity, and reflective practice among the participants. The K20 Phase I Leadership training is one example of the support that administrators are receiving to implement and sustain a technology rich professional learning community. Although technology is constantly evolving, the Intelligent PLC will serve as a model for the development of a professional learning community in the digital age.

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APPENDIX A

Personal Vignettes of the Participants

Participant A – Elementary Principal

Participant A is a white female principal from a suburban school district. She spent 11 years as a classroom teacher and has spent the last four years as an administrator. Her elementary school serves as a fifth grade center for her school district with a population of 182 students, which are among the 2,476 total students enrolled in the school district. The majority of students enrolled in the school are White, making up about 56% of the student body. The next largest ethnic group is Hispanic consisting of 21% of the student population. The city is considered medium-sized with the majority of the community being White and a median household income of $31,200.00. Most households, about 94% speak English as their primary language. This community does have a close proximity to a large metropolitan area. The faculty includes 10.5 classroom teachers with the average class size being 17. The school is eligible for state and federal financial aid through the Title I program. Approximately 64% of the student body is eligible for free or reduced lunch.

Participant B - Elementary Principal

Participant B is a white female principal from a suburban school district. Her elementary school serves 503 preschool and elementary school students, which are among the 1,635 total students enrolled in the school district. This school operates grades PK-3 with the majority of students enrolled being White, making up about 55% of the student body. The city is considered medium sized with the majority of the community being White and a median household income of $33,283. Most households, about 89%, speak English as

their primary language. The staff includes 34 full-time "equivalent" teachers that instruct the student body with an average class size of 14.8. The head school administrator oversees the daily operations of the school. This school is eligible for state and federal financial aid via the school-wide Title I program, which plays an important role in helping fund school operations and provides assistance to low-income and at risk students. Also, around 51% of the students are able to obtain lunch at no cost or at a reduced price.

Participant C – Middle School Assistant Principal

Participant C is a white female assistant principal in a middle school enrolling 662 students from grades 6-8. She has fourteen years total experience with five years as a teacher and nine as an administrator. The middle school is located in a highly populated city which is a predominantly White community with a median household income of $36,713. This school is part of district that operates four other middle schools. As an assistant principal, this participant helps the lead administrator oversee a staff which includes thirty-nine full-time equivalent teachers serving the student body with an average class size of 16.8. The majority of the students enrolled are White, making up about 68% of all students. This school is eligible for a school-wide Title I program having access to state and federal assistance to help low-income and at risk students. Also, about 49% of the students can obtain lunch for free or at a reduced cost.

Participant D – Elementary Principal

Participant D is a white female principal in an elementary school that serves a population of 598 preschool and elementary school students from grades PK-5. She has 25 years of teaching experience, nine years of central office experience, and eight years as an

elementary principal. Her school is located in a highly populated city which is a predominantly White community and a median household income of $36,713. This school is part of a school district that has a total student enrollment of 13,718.The principal, with the support of an assistant principal, oversees the school's faculty and staff, including 33 full-time "equivalent" teachers serving the student body with an average student teacher ratio of 17.7. The majority of students enrolled are White, making up about 78% of all students. This school is not eligible for Title I funding.

Participant E – Elementary Principal

Participant E is a white male principal of an elementary school that serves 460 students, which is one of among two other elementary schools in the school district. He taught kindergarten for four years before moving into the role of a principal which he has been doing for the past five years. This school operates second and third grades with the majority of students enrolled being White, making up about 81% percent of the student body. The school is located in a medium sized city with the majority of the community being White and a median household income of $35,250. Most households, about 93%, speak English as their primary language. The faculty and staff include 26 full-time "equivalent" teachers that instruct the student body with an average student teacher ratio of 17.6. This school is eligible for state and federal financial aid via the school-wide Title I program, with 55% of the students able to obtain lunch at no cost or at a reduced price.

Cluster Coach F – Middle School Principal

Cluster coach F is a white male middle school principal with a school enrollment of 433 elementary and middle school students from grades fifth - eighth. The school is located

in a medium-sized city in a predominantly White community. The median household income is $36,324.00. The total student enrollment for the district is 1,522. Cluster coach F oversees a school staff of 27 full time teachers serving the student body with an average class size of 16.0. The majority of students enrolled in the school are White making up about 71 % of all students. This school is eligible for school-wide Title I funding with about 48% of the students able to obtain lunch for free or at a reduced cost.

Cluster Coach G – High School Principal

Cluster coach G is white female secondary principal with a school enrollment of 162 students in a school district of 469 students. The school operates grades ninth – twelfth with the majority of the students enrolled being White which makes up about 61% of the student body. This high school is located in a small city with the majority of the community being White and a median household income of $25,921.00. Most households (97%) speak English as their primary language. The faculty and staff include 12 full time teachers that instruct the student body with an average class size of 13. 5. The school is eligible for Title I funding with approximately 31% of the students able to obtain a free lunch or one at a reduced price.

Cluster Coach H – Middle School Principal

Cluster Coach H is a white male middle school principal at a site that serves 662 students in grades sixth - eighth with two assistant principals. This middle school is one of four in a school district located in a highly urbanized area with the majority of the population being White and a median household income of $36, 713.00. Most households (88%) speak English as their primary language. The faculty and staff include 39 full time teachers with an average student teacher ratio of 16.8. The school is eligible for Title I

funding with 49% of the students able to obtain lunch at a free or reduced price. This cluster coach's assistant principal was one of the participants in his cluster group.

Cluster Coach I – Executive Director of Special Services

Cluster Coach I is a white female and former assistant principal of a middle school. Her current position is the Executive Director of Special Services for her school district which is located near a large city having a population greater than 250,000. This school district includes 27 schools that serve 18, 790 students in grades pre-kindergarten through twelfth. The district has 16 students for every full time teacher. Approximately 13% of the students have an IEP (Individualized Education Program). An IEP is a written plan for students eligible for special needs services.

Cluster Coach J – School Superintendent

Cluster Coach J is a white male former high school principal now serving as his school district's superintendent. The community revolves around this independent school district which consists of pre-kindergarten through twelfth grade and a total of 235 students. The average class size is 16 students for every full time teacher. 65.2% of the students are eligible for lunch at a free or reduced price. The school is the largest employer in the community and the center of activities.

APPENDIX B

Interview Questions

Participants

- What led you to this leadership development program?
- How would you describe your experiences in the OK-ACTS' cluster group and your role as a participant?
- How would you describe this professional development to another educator?
- How you describe your understanding of the role of the cluster coach?
- What impact does the cluster coach have on the cluster group?
- What are the strengths and weaknesses of the cluster group?
- What ideas did you gain from your cluster group and other participants?
- How does your professional development relate to a Professional Learning Community?
- How did the utilization of technology impact your cluster group?
- What changes have you made at your school as a result of this leadership experience?
- What are your suggestions for future cluster groups and coaches?
- Other comments?

Cluster Coaches

- What led you to accept the role of a cluster coach?
- Can you describe your experiences in the OK-ACTS cluster group and your role as a cluster coach?
- How would you describe this professional development to another educator?

- What impact does the cluster coach have on the cluster group?
- What are the strengths and weaknesses of being in a cluster group?
- How does this professional development help you/hinder you in relation to a Professional Learning Community?
- How did the utilization of technology impact your cluster group?
- How did the utilization of technology impact your coaching methods?
- What changes have you made at your school as a result of this leadership/coaching experience?
- What ideas did you gain from your cluster group?
- What are your suggestions for future cluster groups and coaches?
- Other comments?

APPENDIX C

IDEALS Framework
10 Practices of High Achieving Schools
(O'Hair et al., 2000)

APPENDIX D

The University of Oklahoma

OFFICE OF HUMAN RESEARCH PARTICIPANT PROTECTION - IRB

IRB Number: 10314
Amendment Approval Date: August 31, 2010

September 01, 2010

Jean Cate, Ph.D.
K20 Center
3100 Monitor Avenue, Suite 200
Norman, OK 73072

RE: IRB No. 10314/Protocol No. FY2002-286: Developing Professional Learning Communities Through Administrator Leadership and Technology Integration

Dear Dr. Cate:

On behalf of the Institutional Review Board (IRB), I have reviewed your protocol modification form. It is my judgement that this modification allows for the rights and welfare of the research subjects to be respected. Further, it has been determined that the study will continue to be conducted in a manner consistent with the requirements of 45 CFR 46 as amended; and that the potential benefits to subjects and others warrant the risks subjects may choose to incur.

This letter documents approval to conduct the research as described in:

Amend Form Dated: August 20, 2010

Amendment Summary:

Change in study personnel: Delete Bill Caruthers and Dan O'Hair; add Leslie Williams and Mary Grace Brandt. Increase enrollment from 1500 to 2000.

This letter covers only the approval of the above referenced modification. All other conditions, including the original expiration date, from the approval granted August 31, 2010 are still effective.

If consent form revisions are a part of this modification, you will be provided with a new stamped copy of your consent form. Please use this stamped copy for all future consent documentation. Please discontinue use of all outdated versions of this consent form.

If you have any questions about these procedures or need additional assistance, please do not hesitate to call the IRB office at (405) 325-8110 or send an email to irb@ou.edu.

Cordially,

Aimee Franklin, Ph. D
Vice Chair, Institutional Review Board

Ltr_Amend_Final_Appv_Exp

1610 West Lindsey, Suite 150 Norman, Oklahoma 73069 PHONE: (405) 325-8110